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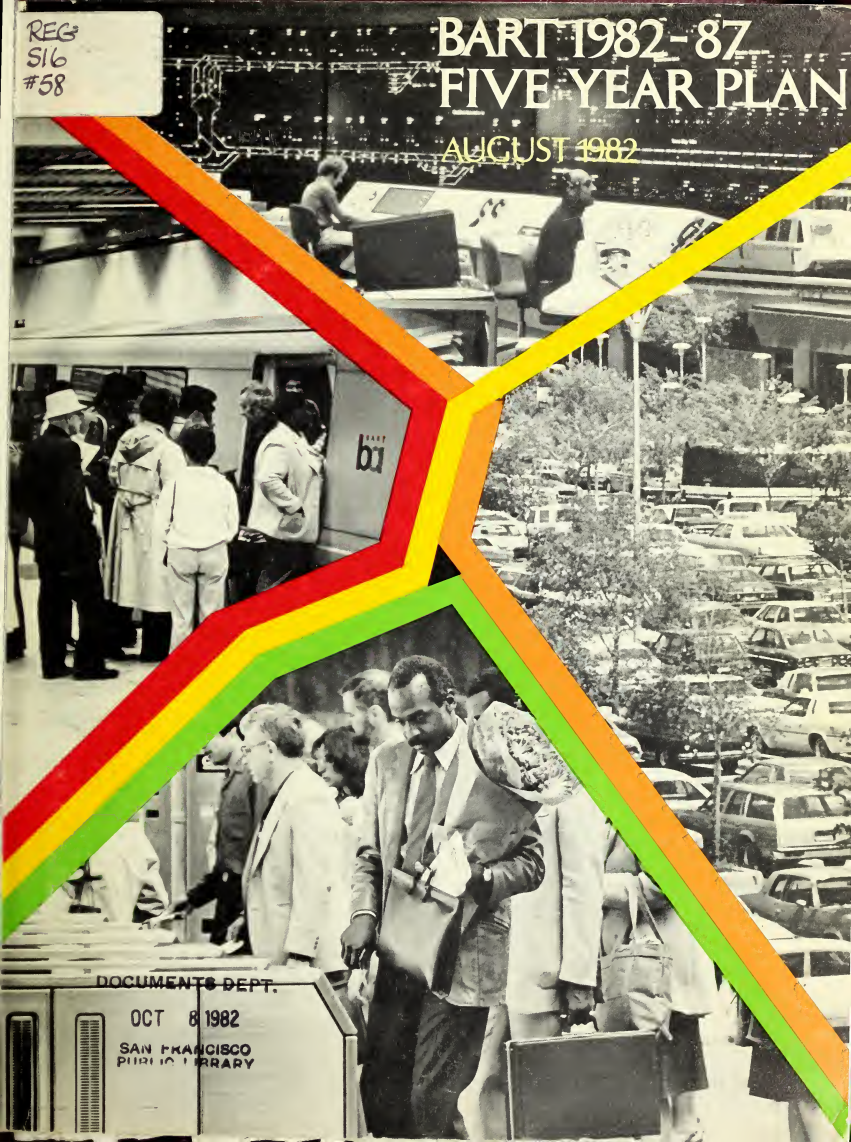
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BART 1982-87 FIVE YEAR PLAN

AUGUST 1982



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BAY AREA RAPID TRANSIT DISTRICT

SHORT RANGE TRANSIT PLAN

FOR THE FIVE-YEAR PERIOD

JULY 1982 THROUGH JUNE 1987

ADOPTED JUNE 24, 1982

The preparation of this report has been financed in part through a grant from the United States Department of Transportation, Urban Mass Transportation Administration under the Urban Mass Transportation Act of 1964, as amended, as passed through the Metropolitan Transportation Commission.

The contents of this report reflect the views of BART, which is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policy of the U.S. Department of Transportation. This report does not constitute a standard, specification or regulation.

BAY AREA RAPID TRANSIT DISTRICT

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General Manager

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PROJECTED CAR REQUIREMENTS BY ROUTE BASED ON ANTICIPATED PM PEAK DEMAND,
CURRENT LOAD FACTOR OBJECTIVES AND PROPOSED SERVICE EXPANSION

	Dec. 1981	June 1982	June 1983 ^a	June 1984	June 1985	June 1986	June 1987 ^c
Concord/Daily City							
Peak 60 Minutes	70[8]*	70[13]*	70[15]*	70[20]* ^b	70[25]* ^b	70[30]* ^b	100[14]*
Balance of Peak	58	70	70	70	70	70[4]* ^b	90
Fremont/Daily City							
Peak 60 Minutes	50[2]*	50[6]*	50[7]*	50[11]*	50[14]* ^b	50[18]* ^b	70[7]*
Balance of Peak	37	40	41	43	46	50	57
Richmond/Daily City							
Peak 60 Minutes	24	25	25	27	28	30	34
Balance of Peak	24	27	28	29	31	33	38
Richmond/Fremont							
Peak 60 Minutes	25	25	26	27	28	30	34
Balance of Peak	20	21	21	22	24	26	29
Total On-Line							
A/C-Cars	84	86	86	86	86	86	108
B/C-Cars	224	242	245	252	261	273	344
Total	308	328	331	338	347	359	452
Spares							
A/C-Cars	18	18	18	18	18	18	18
B/C-Cars	29	29	29	29	29	29	29
Total Required							
A/C-Cars	102	104	104	104	104	104	126
B/C-Cars	253	271	274	290	290	302	373
Total	355	375	378	385	395	406	499
Surplus (shortage)							
A/C-Cars	16	7	7	7	7	24	16
B/C-Cars	10	(9)	(12)	(19)	(28)	0	0
Total	26	(2)	(5)	(12)	(21)	24	16

* Number in [] for peak 60 minutes on Concord & Fremont/Daily City routes reflects projected deficiency at 1.3 load factor resulting from inability to schedule more/longer trains.

a After impact of regionally coordinated fare increase.

b Reflects load factor exceeding 1.6.

c Reflects 54-train service.

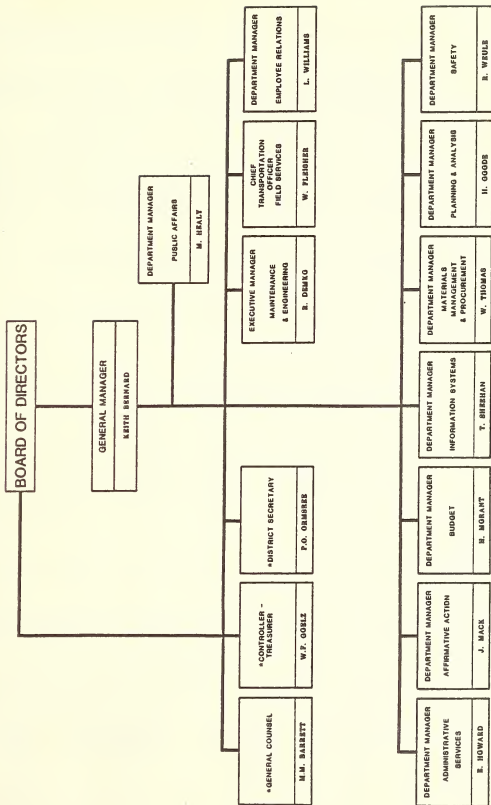
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SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT



* BOARD APPOINTEE

K.A. Bernard
APPROVED
JUNE 23, 1981

BART FACT SHEET

(April-June 1982 data or as noted)

FIXED FACILITIES

Mainline Track: Revenue service is provided over 71.5 miles of double mainline track, of which approximately 20 miles are in subway, 24 elevated, and 27 at grade.

Stations: There are 34 stations including 14 in subway, 13 elevated, and 7 at grade. Average station spacing is between 1/2 to 1 mile within and adjacent to San Francisco, Oakland, and Berkeley downtown areas, and 2 to 4 miles apart in suburban areas. Automatic fare collection equipment is located in each station to vend and process patron tickets. BART provides approximately 22,000 free parking spaces at 22 stations and an additional 200 fee (25¢) spaces at Lake Merritt Station adjacent to downtown Oakland.

Maintenance Facilities: Vehicle maintenance is performed at three Eastbay yards located in Hayward, Concord, and Richmond.

Administrative/Central Control Center: Trains are automatically controlled by wayside equipment and supervised by the central computer at BART headquarters located above the Lake Merritt Station in Oakland.

ROLLING STOCK

Fleet Inventory: BART's maintenance fleet consists of 136 control-equipped A-cars and 301 trail B-cars. Each vehicle contains 72 seats and is approximately 70 feet long by 10.5 feet wide.

Trains: Train lengths range from 3 to 10 cars and consist of 2 A-cars (one at each end) and between 1 and 8 B-cars. Corresponding seating capacity is between 216 and 720. Top speed is 80 mph with a systemwide average of 33 mph, including station stops. Trains stop at each station along a designated route.

SERVICE HOURS

Rail: Rail service is operated between the hours of 6 a.m. and 12 midnight Monday through Saturday and 9 a.m. to 12 midnight on Sundays and major holidays. Service frequencies (in minutes) for individual routes and line segments are as follows:

	TRANSBAY ROUTES			EASTBAY	CBD LINE SEGMENT	
	Concord-Daly City	Fremont-Daly City	Richmond-Daly City	Richmond-Fremont	San Francisco	Downtown Oakland
WEEKDAY						
Peak Hour	8,6	12	15	12	3,8	3,8
Midday	15	15	15	15	5	5
Night	20	*	*	20	20	10
SATURDAY						
Daytime	20	20	20	20	6,7	6,7
Night	20	*	*	20	20	10
SUNDAY/HOLIDAY						
All Day	20	*	*	20	20	10

*Requires transfer between Concord/Daly City and Richmond/Fremont routes

Express Bus: The District also provides express bus service within major travel corridors not served by rail in both Alameda and Contra Costa counties in the Eastbay. Bus service frequencies (in minutes) are as follows:

	Eastern Contra Costa	Western Contra Costa	Central Contra Costa-Alameda	Eastern Alameda
WEEKDAY				
Peak Hour	30	30	30	30
Midday	30	30	30	30
Night	60	*	60	60
SATURDAY				
Daytime	60	60	60	60
Night	60	60	60	60
SUNDAY/HOLIDAY				
All day	60	*	60	60

*No service during this time period.

****FARES**** (Per August 19, 1982 District Board action--to take effect September 8, 1982)

Regular Adult: Rail fares are largely based on a distance formula ranging from 60¢ to \$2.15. The average weekday rail fare is approximately \$1.24. Regular express bus fares are 60¢ and 90¢ for one and two zone rides, respectively; rail patrons transferring to an express bus may obtain a free transfer worth 60¢.

Discounts: Rail fares for handicapped persons, students 5-12 years of age, and persons 65 years of age and older are 10% of the regular adult fares. Children under 5 can ride free. Discount bus fares are 10¢ for one zone and 20¢ for two zones for the groups listed above.

Transfers: Free transfers can be made between all BART trains. Special agreements between BART and most other Bay Area operators permit up to a 50% discount for connecting transit service (on a round-trip basis).

****PATRONAGE****

Average Weekday: BART patronage has been averaging approximately 190,000 rail trips per weekday with slightly more than half occurring within the 4-hour peak travel period (2-morning hours plus 2-afternoon hours). Approximately 50% of weekday travel is Transbay with 28% Eastbay and 22% Westbay.

Weekends: Patronage for a typical Saturday is 75,000 to 80,000 trips with approximately 45% for Transbay travel, 35% Eastbay, and 20% Westbay. Sunday ridership is averaging 45,000 to 50,000 trips with roughly the same market split as for Saturday travel.

Annual Ridership: Total ridership during FY 1981/82 was 53,290,643 rail trips versus a forecast of 48,577,000 for the same period (9.7% above forecast and 13.7% above total ridership for FY 1980/81).

****CAPACITY****

On-Line Requirements: BART currently operates a maximum of 42 on-line trains which require 84 A-cars and 219 B-cars. In addition to these, 9 trains are held as ready spares requiring 18 A-cars and 29 B-cars.

Maximum Service Delivery: Scheduled peak hour capacity for the three Transbay routes serving downtown San Francisco and Oakland stations is 16 trains consisting of 145 cars (or 10,440 seats). For the Eastbay route, which serves downtown Oakland stations, maximum peak hour capacity is 5 trains consisting of 26 cars (or 1,872 seats).

****KEY PERFORMANCE INDICATORS****

On-Time Performance: Daily on-time performance has consistently been above 90% since October 1980 and is currently averaging approximately 93%.

Scheduled Train Runs Completed: Performance has consistently been above 98% since January 1981 and is currently just under 99%.

Load Factors: Continued patronage increases, given current capacity limitations, have resulted in peak hour load factors averaging 1.50 for Transbay service and 1.14 for the Eastbay route (versus a 1.30 load factor policy). Load factors for the shoulder period (approximately 45 minutes before and after the peak hour) are currently averaging 1.13 Transbay and 0.98 for the Eastbay route (versus a policy of 1.15).

Peak Period Transbay Throughput: The percentage of scheduled Transbay capacity actually provided during FY 1981/82 is 98% for trains and 97% for cars.

****OTHER PERFORMANCE INFORMATION FOR FY 1981/82****

PERFORMANCE DATA (in thousands)	
Passenger-miles	717,998.3
Car-miles	28,505.4
Car-hours	1,045.9
Rail Operating Cost	\$111,114.7
Express bus cost	\$6,706.0
Total operating cost	\$117,820.7
Passenger revenue	\$52,677.4
Other revenue	\$6,432.0
Total revenue	\$59,109.4

PERFORMANCE INDICATORS	
Farebox ratio	45.16%
Operating ratio	50.67%
Rail operating cost/passenger	\$2.09
Rail operating cost/passenger-mile	15.48¢
Rail operating cost/car-mile	\$3.90
Rail operating cost/car-hour	\$106.24
Passengers/car-mile	1.87
Passenger-miles/seat-mile	0.35
Passenger-miles/car-hour	686.49

S U M M A R Y

The Short Range Transit Plan presents the District's strategy for improving BART service in order to realize greater system use and operational efficiencies. The plan addresses system deficiencies and identifies methods to rectify current operational problems as well as identifying essential facilities to support future service levels. Guiding the process are Board adopted goals which specify key District concerns. The goals for FY 1982/83 are listed below:

- GOAL 1: Continue to improve BART safety and emergency preparedness.
- GOAL 2: Improve the reliability performance of the present BART system.
- GOAL 3: Operate within available funds without incurring an unfunded deficit.
- GOAL 4: Fund adequately and implement the necessary capital improvements and replacements to the system.
- GOAL 5: Maximize the contribution to operating costs from passenger revenues, consistent with reasonable fare levels, to achieve a farebox ratio above 40%.
- GOAL 6: Increase ridership and utilization of the \$1.7 billion BART investment in plant and equipment.
- GOAL 7: Consistent with the above, continue to expand service within feasible technical and financial limits, including improved peak-hour frequency of service and capacity where needed.
- GOAL 8: Coordinate with communities and public agencies and with other transit operators within the District and region the planning of service levels, operations and fares; improved system access, accessibility, and transfer facilities; joint development; and system extensions.
- GOAL 9: Make every effort to achieve District objectives for female and minority employment and minority business enterprise participation.

* * *

PROGRAM AREA HIGHLIGHTS

Ten program areas have been defined as suggested by the goals to strengthen the linkage between Board adopted policy and the organization at the department level. Objectives for each program area were then developed based on an evaluation of performance for the period July-December 1981. The revised performance objectives (see pages S-18 to S-20) set specific standards to be achieved for the upcoming five-year period and establish a rational basis for identifying the District's future capital needs.

District efforts during the upcoming five year period will focus on completing key capital projects required for increasing BART capacity while continuing to achieve high safety and reliability standards. The KE track, vehicle fire-hardening, ICS, new C-cars, wayside automatic train control (ATC) modifications, and the Daly City turnback are essential elements of this program. Their completion by mid-1987 will enable the District to increase system capacity 70% above present capabilities. Provision of this additional capacity is essential in view of the anticipated increase in regional travel brought on by the current and projected high growth rates for office space development in San Francisco, Oakland, Walnut Creek, Concord, and other BART served corridors where no significant highway capacity increases are planned. The projected service increases will allow BART to realize its inherent economies of scale by permitting a major expansion of capacity at a less than proportional increase in operating cost.

The following capsulized version of the FY 1982/83 SRTP highlights key District concerns for each program area and identifies critical capital program elements which address the concerns:

Basic System Service and Capacity

BART patronage forecasts indicate continued ridership growth at approximately 9% and 6% for the first two years and 5.6% annually for the remaining three years. To meet this demand, additional vehicles will be required as well as the capability to operate more on-line trains at closer headways than is currently possible. Projected car requirements versus the available fleet mix of A- and B-cars indicate that higher peak period load factors, considerably in excess of current levels, are clearly in BART's immediate future. The planned delivery of the new C-cars starting in late 1985 will result in less crowded peak period conditions with the increased capacity they provide. However, until other essential projects are in place, headway and station platform length (train length) constraints will limit BART's ability to provide sufficient capacity to meet current peak period load factor objectives.

In addition to the new C-cars, the capability to operate more on-line trains at closer headways is being addressed by five important projects which are scheduled for completion to coincide with the planned implementation of higher service levels:

- o KE Track. Currently under construction, this project will provide critically needed capacity through the Oakland wye when completed by mid-1984.
- o Integrated Control System (ICS). Train control capacity will be expanded to meet projected requirements of 75 trains on-line (the existing system maximum is 49 with 42 currently in service). Completion is scheduled for early 1985.
- o Vehicle Fire-Hardening. This safety project is a pre-requisite for eliminating the present vent separation requirement which restricts train operations in all underground portions of the system. Fire hardening of the entire fleet is scheduled for completion by mid-1985.
- o Wayside Automatic Train Control Modifications. This project will eliminate the need for a secondary control system as back-up to the primary automatic train control system, permitting headways to be reduced to 2-1/4 minutes in conjunction with the Daly City turnback. The ATC modifications are scheduled for completion by late 1986.
- o Daly City Turnback. With its completion by late 1987, this facility will improve train reversing capabilities allowing for maximum service frequencies on all transbay routes. The second phase of this project will provide off-peak storage space for excess vehicles between peaks, eliminating the need to return to eastbay yards and thereby significantly reducing traction power requirements.

In support of the overall BART planning process, the System Performance Study is addressing all significant factors involved with implementing higher service levels. This study will greatly expand upon current understanding of system operational characteristics relating to capacity, reliability and safety and will assist management and policy-makers in executing the overall capital improvement program to achieve desired results in the most effective manner possible. This effort is currently scheduled for completion during March 1984.

Reliability

The District's Reliability Improvement Program (RIP) has resulted in dramatically improved service in terms of both consistency and reliability. The program addresses critical aspects of vehicle propulsion, braking and train control, and fare collection equipment. The improvements implemented to date have yielded lower failure rates for critical components and also provide a more fault tolerant mode of train operation under key failure conditions. This latter consideration is essential to the achievement of future reliability performance objectives under planned higher density train operations. Manual cab signalling is an important project which will greatly enhance BART's ability to maintain normal or near normal service under many fault conditions.

The previously identified capacity improvements will also have a direct impact on improving service reliability. The new C-cars will increase operational flexibility which will contribute to more reliable service. The KE track will provide alternate routing capability through the Oakland wye which is essential for maintaining service headways around disabled trains in this congested portion of the system. The Daly City turnback facility will greatly assist in maintaining higher frequency service system-wide by reducing train reversing time and failure response time for replacement of failed consists. And finally, ICS will provide for the replacement of the present train control system with a more reliable system.

Safety and Security

A prime focus of the District's safety program will be to complete the remaining tasks identified during the investigation of the Transbay Tube Fire. With the exception of the consolidation of District radio communication frequencies (RADCOM) and the vehicle fire hardening program, all identified Emergency Preparedness and Life Safety Program tasks will be completed by mid-1983. RADCOM, which is a system communication safety project, is to be completed by mid-1984, and the fire hardening program one year later.

In other safety categories, employee safety awareness will continue to be emphasized to reduce the occurrence of lost-time injuries. Further, passenger accident statistics will be closely monitored to focus on preventative measures. Efforts to improve patron security and system surveillance will continue to be the prime responsibility of BART police services.

System Access

BART's multi-phased Access Plan is a comprehensive guide for the improvement of system access. In the coming five years the District will be implementing numerous projects contained in the plan relating to pedestrian, bicycle, transit, and auto access. The implementation of a multi-operator pass will provide patrons with a convenient method of transferring between BART and other transit systems. This along with the completion of transfer information centers, additional bus shelters, and improved signing and passenger information will provide added convenience and incentives for greater transit usage.

Financial and Operational Efficiency

Improved operating economies will result with the implementation of key capacity and reliability improvements. The new C-cars and the Daly City turnback will significantly reduce operating costs by providing much greater levels of operational flexibility and a Westbay train storage facility. Variable costs of vehicle maintenance and traction power will be reduced as capacity is more accurately tailored to demand.

Intensified efforts in the area of performance reporting will assure management and the Board of Directors that critical financial, patronage, and performance information are provided in a timely manner. Continued enhancement of the District's management information systems will assist in this effort with benefits extended to other aspects of operations including project management, performance monitoring, crime reporting, and police officer dispatching.

Efforts to improve productivity and reduce labor costs are also expected with the continuation of the sick leave buy-back program. Industrial engineering techniques will continue to be used to identify other areas of District operations where more efficient methods or approaches may lead to improved productivity.

Patronage and Travel Promotion

Realization of BART's patronage growth expectations will depend on a number of factors identified in the plan. These include the above mentioned capital improvements necessary for service and capacity expansion. Implementation of a multi-operator pass will increase travel opportunities on BART as well as on AC Transit and MUNI. Improvements in such qualitative factors as system cleanliness and communication will continue to be developed in order to promote increased patronage.

The District will continue to promote increased reverse commute and off-peak ridership where capacity can be provided at a low incremental cost. Market research efforts such as the Passenger Profile and Latent Demand Surveys will contribute in this area by improving the understanding of passenger characteristics and service needs. Based on this understanding, off-peak service will be more aggressively marketed through specific promotions and information programs aimed at attracting high potential groups of riders.

Affirmative Action

Efforts will concentrate on achieving female and minority employee and MBE participation objectives contained in the District's Affirmative Action Plan.

Extension Service and Capacity

Extension planning will focus on supporting the grant application process for the Phase I rail extensions. This effort is being coordinated with planned basic system improvements such as ICS in order to satisfy the requirements of proposed extension as well as basic system needs.

Joint Development

Joint development is closely related to both patronage and travel promotion and system access. Efforts will continue to concentrate on developing plans in order to identify any necessary legislative changes for the purpose of realizing more intensive uses of urban space in and around BART stations.

Performance Data Collection and Reporting

To assist in the decision-making process, timely information reporting will continue to be stressed with specific regard to the Monthly Budget Performance Report, the Monthly Patronage Report, and the Quarterly Performance Report on System Objectives. The District will also be exchanging this kind of information on a regular basis with other rail transit operators.

* * *

FIVE-YEAR FINANCIAL PLAN

The District's five-year financial plan summarizes the requirements necessary to achieve the specified performance objectives through the implementation of supporting capital improvements. The financial plan anticipates that the growing need for BART service will require an expansion of train operations and capital plant during the period. Inflation is expected to continue, putting pressure on operating and capital budgets. At the same time, operating subsidies are likely to be diminished thereby increasing the share of operating cost borne by transit users.

Operating Budget

BART's five-year operating budget outlook will be highly influenced by the District's ability to realize greater economies so that expenses can continue to be met by operating revenues and financial assistance.

Development of BART's five-year operating budget is presented in three steps. First, a preliminary estimate is shown on page S-7 based on passenger revenue at current fares, anticipated financial assistance and projected operating expense requirements. Unfunded operating deficits result from this scenario. Potential fiscal strategies, or adjustments, are proposed to more closely balance the operating budget. These adjustments are described in detail on page S-8 and incorporated in a second preliminary five-year operating statement on page S-9.

This second statement deals only with operating requirements including funding of the improvement allowance. However, given the magnitude of BART's capital requirements and the limits on available capital funds from traditional sources, it is apparent that some contribution to capital must be made from operating sources. The third, and final, projections appear on page S-14. This statement presents a balanced operating budget which includes funded allocations from operating sources for selected capital programs.

As indicated on page S-7, operating expenses are estimated to increase by 10.7% in FY 1982/83 with a 10.4% annual increase for the remaining four years. Key factors effecting these increases include:

- o Significant expense allowances for competitive wage adjustments, and the cost of maintaining fringe benefits as determined by the recently completed labor contract negotiations
- o Additional staff to handle increased workloads in the areas of maintenance, cash handling, operations, and administrative support
- o Moderate power cost increases for FY 1982/83, with some likelihood of larger future increases, especially in the fourth and fifth years
- o Partial implementation of the Express Bus Five-Year Plan including carry-over local service not yet assumed by local operators, and continuation of existing shuttle operations without special funding

PRELIMINARY ESTIMATE ^a
FIVE YEAR OPERATING STATEMENT
PROJECTED OPERATING EXPENSE, REVENUES AT CURRENT FARES,
& ANTICIPATED FINANCIAL ASSISTANCE
(\$ Millions)

	Adopted Budget FY 81/82	Estimated Actual FY 81/82	Projected			
			FY 82/83	FY 83/84	FY 84/85	FY 85/86
REVENUES						
Net Rail Revenue:						
81/82 Level	\$ 45.7	\$50.5	\$50.5	\$50.5	\$50.5	\$50.5
Expected Increase due to Patronage Growth	-	-	4.8	8.0	10.9	13.8
Response to Service Expansion	-	-	-	-	-	-
Express Bus Revenue	1.1	1.1	1.1	1.1	1.1	1.2
Net Passenger Revenue	46.8	51.5	56.4	59.6	62.5	65.5
Other Operating Revenue	5.0	6.1	3.9	4.0	4.0	4.1
Net Operating Revenue	51.8	57.6	60.3	63.5	66.5	69.6
EXPENSES						
Net Labor, Current Service	81.0	78.6	90.1	95.2	101.4	110.1
Additional Service Staffing	-	-	-	-	-	-
Total Net Labor	81.0	78.6	90.1	95.2	101.4	110.1
Express Bus and Shuttle Service	5.3 ^b	6.4 ^b	7.8	8.6	9.4	10.4
Power	18.7	16.6	18.2	21.4	25.2	30.5
Additional Service Power Cost	-	-	-	-	-	-
Other Non-Labor	15.4	15.7	17.2	19.0	20.9	23.0
Additional Service Other Non-Labor Cost	-	-	-	-	-	-
Total Operating Expense	120.4	117.3	133.3	144.2	156.9	174.0
OPERATING DEFICIT	(68.6)	(59.7)	(73.0)	(80.7)	(90.4)	(104.4)
FINANCIAL ASSISTANCE						
Property Tax	3.0	4.4	4.4	4.8	5.2	5.6
Sales Tax (75%)	62.7	60.4	66.1	72.7	80.0	88.0
TDA State Assistance	5.3	2.5	3.0	3.3	3.6	4.0
Total Financial Assistance	71.0	67.3	73.5	80.8	88.8	97.6
NET OPERATING RESULT	2.4	7.6	0.5	0.1	(1.6)	(6.8)
CAPITAL ALLOCATIONS						
Improvement Allowance	2.6	2.6	2.7	2.7	2.8	2.9
NET FINANCIAL RESULT	(0.2)	5.0	(2.2)	(2.6)	(4.4)	(9.7)

^a Before necessary adjustments; for final financial plan, see page S-14

^b Not including shuttle service.

PROPOSED ADJUSTMENTS TO
REDUCE ANTICIPATED DEFICIT
(\$ Millions)

	<u>FY 82/83</u>	<u>FY 83/84</u>	<u>FY 84/85</u>	<u>FY 85/86</u>	<u>FY 86/87</u>
Net Financial Result Before Adjustments: Surplus (Deficit)	\$(2.2)	\$(2.6)	\$(4.4)	\$(9.7)	\$(16.8)
<u>Adjustments:</u>					
o Off-peak Marketing: Fare Impact		1.3	2.0	2.7	3.6
o Off-peak Marketing: Cost Impact		(0.8)	(0.9)	(1.0)	(1.1)
o Elimination of Local Express Bus Service (or Offsetting Subsidy)	0.7	1.3	1.3	1.5	1.6
<u>Subtotal Adjustments</u>	0.7	1.8	2.4	3.2	4.1
Net Financial Result After Adjustments: Surplus (Deficit)	\$(1.5)	\$(0.8)	\$(2.0)	\$(6.5)	\$(12.7)

PRELIMINARY ESTIMATE^a
REVISED FIVE YEAR OPERATING STATEMENT
PROJECTED OPERATING EXPENSE, REVENUES AT CURRENT FARES,
& ANTICIPATED FINANCIAL ASSISTANCE
(\$ Millions)

	Adopted Budget FY 81/82	Estimated Actual FY 81/82	Projected			
			FY 82/83	FY 83/84	FY 84/85	FY 85/86
REVENUES						
Net Rail Revenue:						
81/82 Level	\$ 45.7	\$50.5	\$50.5	\$50.5	\$50.5	\$50.5
Expected Increase due to Patronage Growth	-	-	4.8	8.0	10.9	13.8
Response to Service Expansion	-	-	-	-	-	-
From Additional Off-Peak Promotion	-	-	-	1.3	2.0	2.7
Express Bus Revenue, without Local Service	1.1	1.0	1.1	1.1	1.2	1.4
Net Passenger Revenue	46.8	51.5	56.4	60.9	64.6	68.4
Other Operating Revenue	5.0	6.1	3.9	3.9	4.0	4.1
Net Operating Revenue	51.8	57.6	60.3	64.8	68.6	72.5
						80.7
EXPENSES						
Net Labor, Current Service	81.0	78.6	90.1	95.2	101.4	110.1
Additional Service Staffing	-	-	-	-	-	-
Total Net Labor	81.0	78.6	90.1	95.2	101.4	110.1
Express Bus & Shuttle, Excluding Local Service	5.3b	6.4b	7.1	7.3	8.1	8.9
Power	18.7	16.6	18.2	21.4	25.2	30.5
Additional Service Power Cost	-	-	-	-	-	-
Other Non-Labor, including Extra Marketing	15.4	15.7	17.2	19.8	21.8	24.0
Additional Service Other Non-Labor Cost	-	-	-	-	-	-
Total Operating Expense	120.4	117.3	132.6	143.7	156.5	173.5
OPERATING DEFICIT	(68.6)	(59.7)	(72.3)	(78.9)	(87.9)	(116.8)
FINANCIAL ASSISTANCE						
Property Tax	3.0	4.4	4.4	4.8	5.2	5.6
Sales Tax (75%)	62.7	60.4	66.1	72.7	80.0	88.0
TDA State Assistance	5.3	2.5	3.0	3.0	3.6	4.0
Total Financial Assistance	71.0	67.3	73.5	80.5	88.8	97.6
NET OPERATING RESULT	2.4	7.6	1.2	1.9	0.9	(3.4)
						(9.5)
CAPITAL ALLOCATIONS						
Improvement Allowance	2.6	2.6	2.7	2.7	2.8	2.9
NET FINANCIAL RESULT	\$ (0.2)	\$ 5.0	\$(1.5)	\$(0.8)	\$(1.9)	\$ (6.3)
						\$(12.5)

a: before adjustments for capital project funding; for final financial plan, see page S-14
b: includes local service, and excludes shuttle service.

The combination of operating revenues and financial assistance is projected to increase by 9.0% between FY 1981/82 and FY 1982/83, and 8.3% annually for the remaining four years. This is based on:

- o Rail revenue growth of 9.5% the first year, 6% the second year, and 5.6% thereafter
- o Relatively constant express bus revenues
- o Diminishing return on investments assuming interest rates decline to the 9-10% range
- o BART sales and property tax revenue growth at annual rates of 10% and 8%, respectively

The above conditions, wherein expenses outpace financial resources, are estimated to result in unfunded deficits of \$2.2 million for FY 1982/83 and increasing to \$16.8 million for FY 1986/87, as shown on page S-7.

Opportunities for resolving these unfunded deficits focus on increasing revenues through greater off-peak system usage, and local support of local service which is currently provided by BART express buses and shuttles.

Capital Budget

BART's capital program is developed as the primary method for achieving levels of performance specified by the Board adopted objectives which address the full range of District activities. Initial projections developed for all elements contained in the program (see page S-11) estimate BART's five-year funding requirement to be \$1,046.9 million. Given likely levels of financial assistance for capital purposes and use of BART reserves, \$232.9 million is projected to become available to the District during the current five-year planning cycle. This amount includes \$203.3 million from federal, state, and local sources, and \$29.6 million from BART reserves.

A combination of approaches could be utilized to resolve the projected \$814 million funding shortfall. The current Federal Administration has indicated it will not be providing capital funds for rail extensions and new starts. This would necessitate scaling back the program by delaying the implementation of selected projects beyond the current five-year timeframe. Four such projects have been identified, estimated to reduce the initial capital funding projection by \$615.3 million. These are:

- | | |
|---|------------------|
| o North Concord/Martinez extension (Construction) | \$ 137.8 million |
| o Warm Springs extension (Construction) | 360.0 million |
| o Phase II of the Daly City Turnback (Construction) | 106.9 million |
| o Aerial barriers | 10.7 million |

However, the remaining projects in the current SRTP will still require a level of funding estimated to be \$198.6 million in excess of projected available sources. To reduce this estimated unfunded deficit even further, three projects have been identified which appear to be fundable from non-traditional sources:

CAPITAL PROGRAM COMMITMENTS BASIS
FUNDING REQUIREMENTS VS. ESTIMATED FUNDING AVAILABILITY
(\$ Millions)

<u>FUND SOURCE</u>	<u>82/83</u>	<u>83/84</u>	<u>84/85</u>	<u>85/86</u>	<u>86/87</u>	<u>Within 5 Yrs</u>	<u>Total</u>
UMTA (Section 3)							
Available	25.0	25.0	25.0	25.0	25.0	0.0	125.0
Required	24.8	116.5	5.0	123.9	73.2	0.0	343.4
Difference	0.2	(91.5)	20.0	(98.9)	(48.2)	0.0	(218.4)
Article XIX							
Available	3.1	5.7	5.7	5.7	5.7	0.0	25.9
Required	21.8	6.5	0.0	0.0	0.0	0.3	28.6
Difference	(18.7)	(.8)	5.7	5.7	5.7	(0.3)	(2.7)
TP&D							
Available	6.4	6.0	6.0	6.0	6.0	0.0	30.4
Required	53.5	16.4	472.9	0.0	0.0	3.3	546.1
Difference	(47.1)	(10.4)	(466.9)	6.0	6.0	(3.3)	(515.7)
MTC Allocated							
Available	6.0	4.0	4.0	4.0	4.0	0.0	22.0
Required	16.0	6.7	26.8	13.3	18.3	0.0	(81.1)
Difference	(10.0)	(2.7)	(22.8)	(9.3)	(14.3)	0.0	(59.1)
Other Sources ¹							
Available	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Required	11.0	0.5	5.6	0.0	0.0	1.0	18.1
Difference	(11.0)	(0.5)	(5.6)	0.0	0.0	1.0	(18.1)
Subtotal Non-BART Funds							
Available	40.5	40.7	40.7	40.7	40.7	0.0	203.3
Required	127.1	146.6	510.3	137.2	91.5	4.6	1017.3
Difference	(86.6)	(105.9)	(469.6)	(96.5)	(50.8)	(4.6)	(814.0)
Programmed BART Reserves							
Available	5.4	6.5	0.0	17.7	0.0	0.0	29.6
Required	5.4	6.5	0.0	17.7	0.0	0.0	29.6
Difference	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Total ²							
Available	45.9	47.2	40.7	58.4	40.7	0.0	232.9
Required	132.5	153.1	510.3	154.9	91.5	4.6	1046.9
Difference	(86.6)	(105.9)	(469.6)	(96.5)	(50.8)	(4.6)	(814.0)

Notes: ¹ Other sources include FAU, FAI, UMTA Section 9, and unidentified.

² Improvement Allowance and Operating Funds not included.

- o Financing the first 60 new C-cars (out of an estimated 150 new car-buy) via the sale of approximately \$65 million in sales tax revenue bonds to be repaid from sales tax receipts.
- o Interim use of BART reserves for minor midday parking expansion based on an analysis of potential investment returns; and later, as additional line capacity becomes available, establishing user parking charges to support a systemwide parking expansion program.
- o Earmarking \$2 million annually from the BART TDA funds for the purpose of acquiring future extension station sites and other portions of right-of-way which are in danger of being developed, and using these sites on an interim basis as park/ride facilities in support of express bus operations.

These three projects, when financed as suggested above, are estimated to reduce BART's projected capital funding shortfall by an additional \$78 million. Recent state legislation, Senate Bill 1335, is expected to increase available funding. The actual amounts, however, have yet to be determined by the California Transportation Commission in conjunction with other related legislation. BART estimates an additional \$20 million becoming available over the next five years. When this amount is applied to the unfunded shortfall, the remaining unfunded shortfall becomes \$100.6 million. The \$100.6 million in remaining unfunded projects includes \$54.1 million for 30 additional transit vehicles with ATC and major parking projects. The balance, \$46.5 million, corresponds to the remaining capital program projects including design of initial extension segments. The revised capital program, shown on a commitments basis, is summarized on page S-13 and reflects the \$46.5 million shortfall.

This strategy, however, will have a direct impact on BART's operating budget, as some revenues are re-directed toward supporting the implementation of these projects. A second and final revision to the District's projected five-year operating statement summarizes these impacts on page S-14 (see line items under "Capital Allocations"). This program appears achievable provided a fare increase is implemented in fiscal year 1982/83 and again in 1985/86, and the projected accumulated net surplus from operations is carried forward as a funding source for each subsequent year, and some capital funds are allocated as necessary to fully fund the combined annual budget. The impact of this combined strategy on BART Capital Reserves is shown on page S-15.

Each year the Board adopts an overall annual capital spending budget. The funded and unfunded project listings with estimated dollar drawdown schedules over the next five years for major projects are shown on pages S-16 to S-17. The first year of the projected drawdown that is adopted as a maximum capital expenditure for the year.

The projected maximum capital expenditure for FY 1982/83 totals \$63.3 million, of which \$36.2 million is funded and \$27.1 million (based on cash flows) is unfunded. Major projects for which funded expenditures are planned in the coming year include: KE Track, C-Cars, Communications Cable Network, Radcom, and ICS. Programmed unfunded major expenditures include work on Daly City Turnback, as well as design work on extensions. Numerous additional smaller projects are also included for work in the upcoming fiscal year.

* * *

Updated July 14, 1982
CAPITAL PROGRAM COMMITMENTS BASIS
FUNDING REQUIREMENTS VS. ESTIMATED FUNDING AVAILABILITY
(\$ Millions)

Rev. V

FUND SOURCE	82/ 83	83/ 84	84/ 85	85/ 86	86/ 87	Within 5 Yrs	Total
UMTA (Section 3)							
Available	25.0	25.0	25.0	25.0	25.0	0.0	125.0
Required	61.5	23.4	4.7	86.6	0.9	0.0	177.1
Difference	36.5	1.6	20.3	(61.1)	(24.1)	0.0	(52.1)
Article XIX							
Available	3.1	5.7	5.7	5.7	5.7	0.0	25.9
Required	21.2	4.5	0.0	0.0	0.0	0.0	25.7
Difference	(3.8)	1.2	5.7	5.7	5.7	0.0	0.2
TP&D							
Available	6.4	6.0	6.0	6.0	6.0	0.0	30.4
Required	10.2	3.2	0.0	28.6	0.0	0.0	42.0
Difference	(3.8)	(2.8)	(6.0)	(22.6)	6.0	0.0	(11.6)
MTC Bridge Tolls							
Available	6.1	4.0	4.0	4.0	4.0	0.0	22.1
Required	11.3	1.3	1.2	11.1	0.2	0.0	25.1
Difference	(5.2)	(2.7)	2.8	(7.1)	3.8	0.0	(3.0)
Subtotal Non-BART Funds							
Available	40.6	40.7	40.7	40.7	40.7	0.0	203.4
Required	104.2	32.4	5.9	126.3	1.1	0.0	269.9
Difference	(63.6)	8.3	34.8	(85.6)	39.6	0.0	(66.5)
SB 1335							
Available	4.0	4.0	4.0	4.0	4.0	0.0	20.0
Required	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Difference	4.0	4.0	4.0	4.0	4.0	0.0	20.0
Programmed BART Reserves							
Available	2.9	6.5	0.0	17.7	0.0	0.0	27.1
Required	2.9	6.5	0.0	17.7	0.0	0.0	27.1
Difference	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Total ¹							
Available	47.5	51.2	44.7	62.4	44.7	0.0	250.5
Required	107.1	38.9	5.9	144.0	1.1	0.0	297.0
Difference	(59.6)	(12.3)	38.8	(81.6)	43.6	0.0	(46.5)

Notes: ¹ Other sources include FAU, FAI, UMTA Section 9, and unidentified.

SECOND REVISION, PROJECTED FIVE-YEAR OPERATING STATEMENT
(\$ Millions)

	Adopted Budget FY 81/82	Estimated Actual FY 81/82	Projected				
	FY 81/82	FY 81/82	FY 82/83	FY 83/84	FY 84/85	FY 85/86	FY 86/87
REVENUES							
Net R31 Revenue:							
81/82 Level	\$ 45.7	\$ 50.5	\$ 50.5	\$ 50.5	\$ 50.5	\$ 50.5	\$ 50.5
Expected Increase due to Patronage Growth	-	-	4.8	8.0	10.9	13.8	16.9
Proceeds of Fare Increase	-	-	6.9	8.0	8.4	18.0 ^a	18.9
Response to Service Expansion	-	-	-	-	-	-	5.1
From Additional Off-Peak Promotion	-	1.0 ^b	-	1.3	2.0	2.7	3.6
Express Bus Revenue, w/Out Local Service	1.1 ^b	51.5	1.1	1.1	1.2	1.4	1.5
Net Passenger Revenue	46.8	51.5	63.3	68.9	73.0	86.4	96.5
Other Operating Revenue	5.0	6.1	3.9	3.9	4.0	4.1	4.2
Net Parking Charges	-	-	-	2.0	2.0	2.0	2.0
Net Operating Revenue	51.8	57.6	67.2	74.8	79.0	92.5	102.7
EXPENSES							
Net Labor, Current Service	81.0	78.6	90.1	95.2	101.4	110.1	116.1
Additional Service Staffing	-	-	-	-	-	-	3.4
Total Net Labor	81.0	78.6	90.1	95.2	101.4	110.1	119.5
Express Bus & Shuttle, Excluding Local Service	5.3 ^b	6.4 ^b	7.1 ^c	7.3	8.1	8.9	9.8
Power	18.7	16.6	18.2	21.4	25.2	30.5	38.1
Additional Service Power Cost	-	-	-	-	-	-	3.2
Other Non-Labor, Including Extra Marketing	15.4	15.7	17.2	19.8	21.8	24.0	26.4
Additional Service Other Non-Labor Cost	-	-	-	-	-	-	0.5
Total Operating Expense	120.4	117.3	132.6	143.7	156.5	173.5	197.5
OPERATING DEFICIT	(68.6)	(59.7)	(65.4)	(68.9)	(77.5)	(81.0)	(94.8)
FINANCIAL ASSISTANCE							
Property Tax	3.0	4.4	4.4	4.8	5.2	5.6	6.1
Sales Tax (75%)	62.7	60.4	66.1	72.7	80.0	88.0	96.8
TDA State Assistance	5.3	2.5	3.0	3.3	3.6	4.0	4.4
Total Financial Assistance	71.0	67.3	73.5	80.8	88.8	97.6	107.3
NET OPERATING RESULT	2.4	7.6	8.1	11.9	11.3	16.6	12.5
NET OPERATING RESERVE BEGINNING BALANCE			7.5	4.9	5.0	5.4	6.5
CAPITAL ALLOCATIONS:							
Planning			0.5	0.5	0.5	0.5	0.5
Improvement Allowance	2.6	2.6	2.7	2.7	2.8	2.9	3.0
Revenue Bond Debt Service	-	-	5.5	8.1	8.1	8.1	8.1
Parking Expansion Allocation	-	-	-	2.0	2.0	2.0	2.0
Extension R.O.W. Acquisition Allocation	-	-	2.0	2.0	2.0	2.0	2.0
Total Capital Allocation	2.6	2.6	10.7	15.3	15.4	15.5	15.6
Application of Capital Funds	-	-	-0-	3.5	4.5	-0-	0.6
Net Capital Allocation	-	-	10.7	11.8	10.9	15.5	15.6
NET FINANCIAL RESULT: ACCUMULATED NET OPERATING RESERVE	\$ (0.2)	\$ 5.0	\$ 4.9	\$ 5.0	\$ 5.4	\$ 6.5	\$ 4.0

815k fare increase, FY 1995/86.

Includes local service, and excludes shuttle service.

C includes 5 months of local service.

SUMMARY BALANCE SHEET OF AVAILABLE BART RESERVES
REVISED CAPITAL PROGRAM
(Estimate in 1,000's for 1987)

Rev. VI - 7/25/25

	<u>Line Item</u>	<u>Cumulative Total</u>
BART Reserves (Estimated for June 30, 1982)		71,311
- General Construction (Fund 01) ^a	17,000	
- Basic System Completion (Fund 01) ^a	12,671	
- System Improvement Reserve	21,001	
- Vehicle Replacement Reserve ^b	5,000	
- Vehicle Fire Hardening Reserve ^c	3,200	
- Revenue Vehicle Purchase Reserve ^c	10,000	
- FY 1987/82 Interest Accrued	2,439	
Less New Vehicle Purchase Requirements ^d		(24,606)
Anticipated Interest Income		16,840
Proceeds from Land Sales		<u>1,350</u>
Estimated Balance for Distribution		64,922
BART Obligations		(8,853)
- Land and Land Rights	121	
- Agency and Utility Agreements	1,523	
- Other Costs (Insurance, Bond Agents, etc.)	1,870	
- Local Share CA-03-0052	1,343	
- Outstanding Claims	3,996	
BART Projects Local Shares		(15,888)
Estimated Project Costs Unavailable		(19,950)
From Grant Sources		
- Project Development	5,000	
- Joint Development	1,350	
- Inventory Buildup	5,000	
- Supplement Capital Allocation	8,600	
Contingency Funds (Balance)		20,204

^a Interest accrues to the Bond Fund and is available in the five year period; however, reserve balances do not change to reflect this since the interest does not actually accrue to the specific reserve.

^b Interest accrues to General Project Fund "Fund 04". Use to be determined at a future time. Assumed to accrue to capital purposes for the 5-Year Plan.

^c Interest accrued to "FY 1987/82 Interest accrued".

^d Includes: Vehicle Replacement Reserve, Revenue Vehicle Purchase Reserve, FY 1987/82 Interest Accrued, and \$7,267,000 of System Improvement Reserve.

PART FIVE-YEAR FUNDED CAPITAL PROGRAM (\$x1000)

FMS NO.	PROJECT NAME	FUNDED BUDGET	TEST-EXP. FY 0-82	CASH FLOWS					86/87	WITHIN 5 YEARS
				82/83	83/84	84/85	85/86			
41E1C	TRANSIT VEHICLE FIREHARDENING	12949	0	334	6025	6025	565	0	0	0
42BA	FOUR PROTOTYPE C-CARS	8625	250	3418	4957	0	0	0	0	0
07CB6	KE-TRAC-(KEF)	23956	13056	5400	4500	1000	0	0	0	0
17H-	REGIONAL ADMINISTRATIVE CENTER	9295	339	5428	3528	0	0	0	0	0
61--	INTEGRATED CONTROL SYSTEM - ICS	19406	17304	2102	0	0	0	0	0	0
27DB	COMMUNICATIONS CABLE NETWORK	11641	4821	6820	0	0	0	0	0	0
99001	RADCOM	3735	500	2000	1235	0	0	0	0	0
-	ALL OTHER FUNDED PROJECTS	28719	9677	10653	6054	985	0	0	0	1350
	TOTAL FUNDED	118326	45947	36155	26299	8010	565	0	0	1350

BART FIVE-YEAR UNFUNDED CAPITAL PROGRAM (\$X1,000) (REVISED)

REVISED 7/14/82

FMS NO.	PROJECT NAME	PROGRAM YEARS					CASH FLOW YEARS						
		82/83	83/84	84/85	85/86	86/87	WITHIN 5 YRS	82/83	83/84	84/85	85/86	86/87	WITHIN 5 YRS
	VEHICLE FIDE HARDENING	6398	0	0	0	0	0	166	2975	2975	282	0	0
428A	FOUR PROTOTYPE C-CARS	18870	0	0	0	0	0	0	14410	4460	0	0	0
428B	85 PRODUCTION C-CARS	0	0	0	118055	0	0	0	0	0	75517	42538	0
428CA	2ND GENERATION ATD/PREPRODUCTION	2452	0	0	0	0	0	1590	862	0	0	0	0
428C3	2ND GENERATION ATD/90 C-CARS	0	15906	0	0	0	0	0	0	874	9788	5244	0
01Y-	WARM SPRGS-TRV STA EXT (DESIGN)	21300	0	0	0	0	0	10100	11200	0	0	0	0
01Z--	N4 CONCORDIA/MARTINEZ EXT (DESIGN)	10800	0	0	0	0	0	6700	4100	0	0	0	0
111RD	TRACK EXTENSION/TURNBACK PHASE II	34960	0	0	0	0	0	3100	1740	5720	12050	9800	0
111RE	STORAGE FACILITY/TURNBACK PH II (DESIGN)	0	2330	0	0	0	0	0	1640	690	0	0	0
51--	INTEGRATED CONTROL SYSTEM-ICS	6672	0	0	0	0	0	1724	3566	1382	0	0	0
99*09	WAYSIDE ATC MODS	0	19965	0	0	0	0	0	10000	9965	0	0	0
-	OTHER UNFJNDED PROJECTS(REVISED)	5760	1160	5847	25945	1064	773	3743	3177	5847	13438	13571	773
	TOTAL UNFUNDED (REVISED)	107212	39361	5947	144000	1064	773	27123	53670	31913	111075	71153	773

PROGRAM AREA A: BASIC SYSTEM SERVICE AND CAPACITY

1. Operate scheduled four-route weekday service with route headways of 15 minutes or less on each line during peak and midday periods.
2. Seek to maintain average weekday load factors in peak direction at each route's maximum load point of not over 1.3 during the primary peak-hour, 1.15 during the balance of the peak period, and 1.05 during off-peak service.
3. Operate weekday peak period Transbay service in the peak direction providing at least 98% of scheduled train throughput and 97% of scheduled car throughput on a monthly average basis.
4. Make available 106 A-cars and 262 B-cars for revenue service by 4 A.M. (weekdays).

PROGRAM AREA B: RELIABILITY

1. Complete 98% of all monthly scheduled dispatches.
2. Conduct operations such that on a monthly basis 95% of daily terminal-to-terminal runs are completed within 5 minutes of scheduled run times with at least 93% during the AM and PM peak periods for commute days.
3. Provide service such that 98% of peak period trains do not experience a primary delay exceeding 7 minutes and 94% are not delayed more than 7 minutes from all causes.
4. Report the monthly average percentage of all weekday patron trips within five minutes of their scheduled run times and compare it against a performance level objective (to be determined by June 1982).
5. Provide service such that passenger off-load rates remain at or below the following:

Cause	Rate Per 1000 Car Hours
Vehicle equipment	0.9
Keyside equipment	0.1
Operations & Other	0.1
Total	1.1

6. Maintain the overall AFC technician maintenance incident rate at or below 0.30 incidents per 1000 passenger trips, and maintain or exceed a 6 AM average weekday availability rate of 95% for entry/exit gates and 90% for ticket vendors.
7. Maintain a 6 AM average weekday availability rate of 95% for elevators and escalators.

PROGRAM AREA C: SAFETY AND SECURITY

1. Provide sufficient police coverage such that by June 1983 the rate of patron related crimes does not exceed 17.0 per million passengers.
2. Continue to provide an environment for patron circulation through trains and stations such that by June 1983 the accident rate does not exceed 17.7 per million passengers.
3. Reduce the total annual number of employee lost time injuries to 211 or less.
4. Reduce the total annual amount of employee lost time due to injuries to a percent of time worked to 0.65% or less.

PROGRAM AREA D: SYSTEM ACCESS

1. Implement the District's Access Plan and Express Bus Plan.

PROGRAM AREA E: FINANCIAL AND OPERATIONAL EFFICIENCY (data to be derived from budget).

1. Maintain a funded budget and a farebox ratio of 40% or more under an appropriate structure.
2. Maintain a rail cost per passenger-mile of _____ \$ or less.
3. Achieve a level of service output such that the following vehicle miles are produced per equivalent District employee based on 2000 hours worked including overtime, excluding capitalized labor:

Operations Departments	_____
Administrative & Support Depts.	_____
Total District	_____
4. Improve system utilization (passenger-miles per seat mile) to _____ \$ by June 1983 through continued monitoring of train capacity to match passenger demand patterns.
5. Maintain a paid sick leave rate of no more than 3.5% (9.1 paid days annually per employee).

PROGRAM AREA F: PATRONAGE AND TRAVEL PROMOTION

1. At a minimum, achieve normal growth projections for average daily patronage as follows (in 1,000's): (after impact of regionally coordinated fare increase)

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
Avg. Wday:	104.2	104.2	104.2	104.2	104.2	104.2	104.2	104.2	104.2	104.2	104.2	104.2
4-Hr Pk:	92.4	93.1	93.8	94.5	95.2	95.9	96.6	97.3	98.0	98.7	99.4	100.1
Off-Pk:	92.5	93.1	93.7	94.3	94.9	95.5	96.1	96.7	97.3	97.9	98.5	99.1
Saturday:	66.5	79.2	75.6	73.2	70.8	68.4	66.0	63.6	61.2	58.8	56.4	54.0
Sunday:	41.2	49.3	47.6	50.5	49.4	46.7	42.1	43.2	43.8	44.3	44.9	45.4

2. In addition to the above, actively promote off-peak ridership to achieve a 3% increase in travel as follows (in 1,000's):

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
Avg. Wday:	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	3.0
Saturday:	2.0	2.4	2.3	2.2	2.3	2.1	2.2	2.3	2.3	2.3	2.3	2.3
Sunday:	1.2	1.5	1.4	1.5	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.4

3. Continue the sampling procedure to evaluate train and station area cleanliness against an acceptable standard, and monitor performance regularly.

4. Continue the sampling procedure to evaluate public contact employee courtesy and helpfulness against an acceptable standard, and monitor performance regularly.

5. Continue the sampling procedure to evaluate the accuracy of service announcements both in stations and on-board trains against an acceptable standard, and monitor performance regularly.

6. Implement a joint pass permitting single ticket riding of the BART and MUNI systems by July 1, 1982 and extend the pass to AC Transit by June 30, 1983.

PROGRAM AREA G: AFFIRMATIVE ACTION

1. Encourage efforts to attain _____ \$ female and _____ \$ minority representation in the District workforce (subject to revision based on analysis of 1980 census data).

2. Encourage efforts to attain 20% minority and female owned business enterprise participation in District contract activities.

PROGRAM AREA H: EXTENSION SERVICE AND CAPACITY

1. Continue to implement the Extension Right of Way and Facilities Expenditures Program.

PROGRAM AREA I: JOINT DEVELOPMENT

1. Continue to work with local jurisdictions in developing station specific plans.

PROGRAM AREA J: PERFORMANCE DATA COLLECTION AND REPORTING

1. Transmit monthly Patronage Report to Board of Directors, Department Managers and appropriate agencies by the tenth working day of the month; transmit monthly Performance Report to Board of Directors, Department Managers and appropriate agencies by the tenth working day of the month; transmit quarterly Financial Statements and Quarterly Performance Report to Board of Directors by the tenth working day of the month; transmit the Quarterly Operations Performance Report to appropriate recipients within 25 working days of the close of each quarter; publish the District's Annual Report within 120 working days of the end of the fiscal year.

2. Improve information exchange with other systems by exchanging reports and related data with appropriate transit operators on a regular basis.

3. Work with WTC, APTA and UMTA to improve and streamline standardized reporting procedures.

PROGRAM AREA A: BASIC SYSTEM SERVICE AND CAPACITY

- o Operate four-route weekday service with the capability of providing sustained 3.125-minute headways by June 1986 reducing to 2.5 minutes by June 1987 following the completion of the first phase of the Daly City turnback.
- o Support the following weekday car requirements:

		June 1984	June 1985	June 1986	June 1987
CAR REQUIREMENTS:	A-Cars	104	104	104	115
	B-Cars	262	262	272	272
	C-Cars	0	0	30	98
	TOTAL	366	366	406	485
	On-Line	319	319	359	438
	Spare	47	47	47	47
	Fire Hardening	16	16	0	0
	TOTAL	382	382	406	485
TOTAL FLEET:	A-Cars	136	136	136	136
	B-Cars	303	303	303	303
	C-Cars	0	0	50	150
	TOTAL	439	439	489	589

PROGRAM AREA B: RELIABILITY

- o At a minimum, maintain FY 1982/83 reliability objective level performance under higher density train operations pending additional improvements which may be identified by the System Performance Study.

PROGRAM AREA C: SAFETY AND SECURITY

- o Maintain a rate of patron related crime below those for District communities and other transit systems in the Bay Area and in other metropolitan areas.
- o Maintain employee lost-time and patron accident rates at or below the industry-wide average.

PROGRAM AREA D: SYSTEM ACCESS

- o Implement the recommendations contained in the District's Access and Express Bus plans.

PROGRAM AREA E: FINANCIAL AND OPERATIONAL EFFICIENCY

- o Maintain a minimum farebox ratio of 40%.

PROGRAM AREA F: PATRONAGE AND TRAVEL PROMOTION

- o Maintain acceptable quality of service as reflected by accuracy of service announcements, employee helpfulness, and station cleanliness in support of achieving the following patronage levels (1000's):

	June 1984	June 1985	June 1986	June 1987
Average Weekday	208.3	221.7	235.9	259.7
4-Hr. Peak	105.1	109.6	114.2	127.5
Off-Peak	103.2	112.1	121.7	132.2
Saturday	81.6	88.7	96.3	104.6
Sunday	48.0	52.1	56.6	61.4

PROGRAM AREA G: AFFIRMATIVE ACTION

- o Make every effort to achieve participation rates for female and minority employment and minority business enterprise called for in District Affirmative Action and MBE programs.

PROGRAM AREA H: EXTENSION SERVICE AND CAPACITY

- o Continue to implement the Extension Right-of-Way and Facilities Expenditures Program.

PROGRAM AREA I: JOINT DEVELOPMENT

- o Continue to work with local jurisdictions in developing station specific plans.

PROGRAM AREA J: PERFORMANCE DATA COLLECTION AND REPORTING

- o Maintain timely reporting and information exchange efforts.

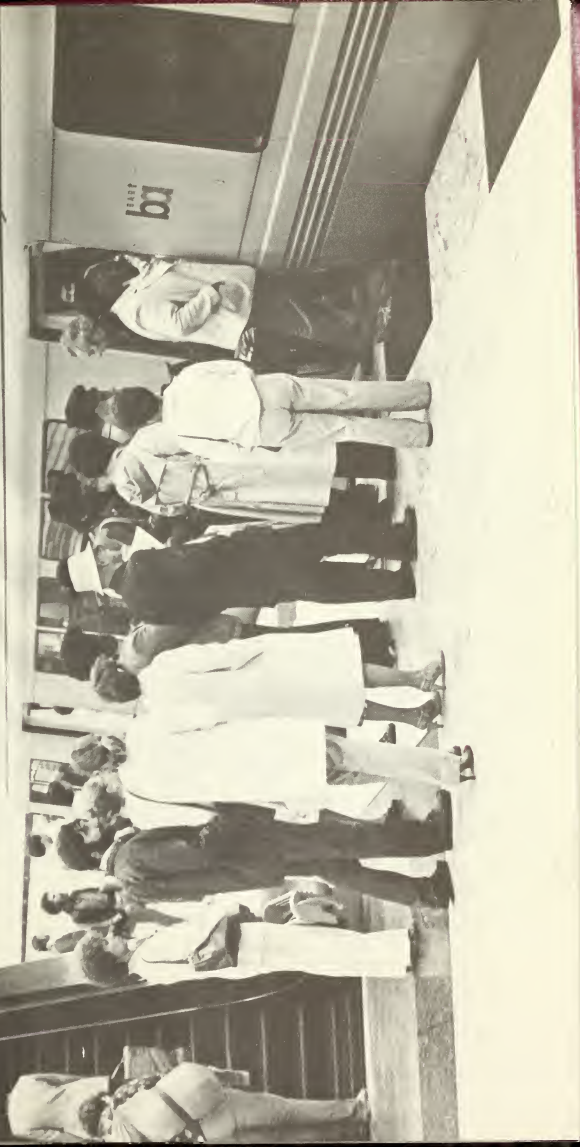
I N T R O D U C T I O N





UN PLAZA
MARKET STREET
RICHMOND / CORCORAN
PRESIDENT

EXIT



BART BACKGROUND AND PURPOSE OF SRTP

The BART District was formed in 1957 by the State Legislature in response to Bay Area growth forecasts and related future transportation needs. While early efforts focused on realizing original design objectives, only through revenue operations, starting in September 1972, did a variety of unanticipated problems actually come to light. Over the past several years, intensive efforts have been directed toward improving reliability and its impact on service quality and capacity. This process has produced a greater understanding of the system's problems together with "fixes" which have significantly improved train service.

BART's short-range plan presents a strategy for continued progress towards achieving a greater share of the system's full potential through improved service quality and overall system performance. The plan is the result of an ongoing process involving the District Board of Directors and management for the purpose of identifying future capital and financial requirements.

The document is divided into three chapters. The first reviews system performance through December 1981 in terms of Districtwide goals and objectives adopted for FY 1981/82. This information is subsequently used as the basis for discussing in Chapter II, key planning issues, future system performance levels, and essential capital improvements. Chapter III then presents the District's five-year financial plan required for the implementation of planned service levels and underlying capital improvements.

* * *

SYSTEM OVERVIEW

The District currently operates trains over 71 miles of double mainline track, of which 20 miles are in subway, 24 miles are on elevated structures, and 27 miles are at grade. The system's 34 stations include 13 elevated, 14 subway, and 7 at grade which are spaced approximately 1/2 mile apart in downtown San Francisco and Oakland and approximately 2 to 4 miles apart in suburban areas. Automatic fare collection equipment is located in each station to vend and process patron tickets. Free parking is provided at 22 stations in addition to one fee lot at Lake Merritt station. Approximately 22,300 automobile spaces are provided systemwide.

Trains are from 3 to 10 cars in length and contain one control equipped vehicle (A-car) at each end with trail vehicles (B-cars) making up the remainder of each consist. All station platforms are 700 feet long to accommodate maximum 10-car trains. As of December 1981, BART's operating fleet consisted of 137 A-cars and 296 B-cars.

Trains are formed and dispatched from 3 maintenance yards in the Eastbay. The central train control computer at the Lake Merritt Administration Building is responsible for overall supervision of train movements. Operators onboard the leading A-car of each train can override automatic controls should the need arise.

Construction and equipment costs for the \$1.7 billion system were financed primarily through local sources including property and sales tax revenues generated within the three BART District counties.

* * *

CURRENT SERVICE OVERVIEW

Rail service is operated between the hours of 6 a.m. and 12 midnight Monday through Saturday and 9 a.m. to 12 midnight on Sundays and major holidays. Service frequencies (in minutes) for individual routes and line segments are as follows:

	TRANSBAY ROUTES			EASTBAY	CBD LINE SEGMENT	
	Concord/ Daly City	Fremont/ Daly City	Richmond/ Daly City	Richmond/ Fremont	San Francisco	Downtown Oakland
<u>WEEKDAY</u>						
Peak Hour	8.6	12	15	12	3.8	3.8
Midday	15	15	15	15	5	5
Night	20	*	*	20	20	10
<u>SATURDAY</u>						
Daytime	20	20	20	20	6.7	6.7
Night	20	*	*	20	20	10
<u>SUNDAY/HOLIDAY</u>						
All Day	20	*	*	20	20	10
*Requires transfer between Concord/Daly City and Richmond/Fremont routes						

The District also provides express bus service within major travel corridors not served by rail in both Alameda and Contra Costa counties. Bus service frequencies are as follows:

	Eastern Contra Costa	Western Contra Costa	Central Contra Costa-Alameda	Eastern Alameda
WEEKDAY				
Peak Hour	30	30	30	30
Midday	30	30	30	30
Night	60	*	60	60
SATURDAY				
Daytime	60	60	60	60
Night	60	60	60	60
SUNDAY/HOLIDAY				
All day	60	*	60	60
*No service during this time period.				

Trains travel at a top speed of 80 miles per hour with an average system speed of 32.7 miles per hour including station stops. Regular adult fares and travel times for the rail system are as follows:

Fares

	Daly City	San Bruno	Glenn Park	24th St Mission	16th St Mission	Civic Center	Powell	Montgomery	Embarcadero	Oakland West	Concord	Pleasant Hill	Walnut Creek	Lafayette	Orinda	Rockridge	Richmond	El Cerrito Del Norte	El Cerrito Plaza	North Berkeley	Berkeley	MacArthur	19th St Oakland	Oak City Ctr. 12th St.	Lake Merritt	Colliseum	San Leandro	Bay Fair	Hayward	Union City	Fremont
5																															
7																															
10																															
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69																															

Time

Fares for handicapped persons, students 5-12 years of age, and persons 65 years of age and older are 10% of the regular adult fares. Children under 5 can ride free. Regular express bus fares are 50¢ and 75¢ for one and two zone rides, respectively (with a free transfer worth 50¢ for BART patrons leaving a station). Discount bus fares are 10¢ for one zone and 20¢ for two zones for the special fare groups listed above.

* * *

DISTRICT ORGANIZATIONAL OVERVIEW

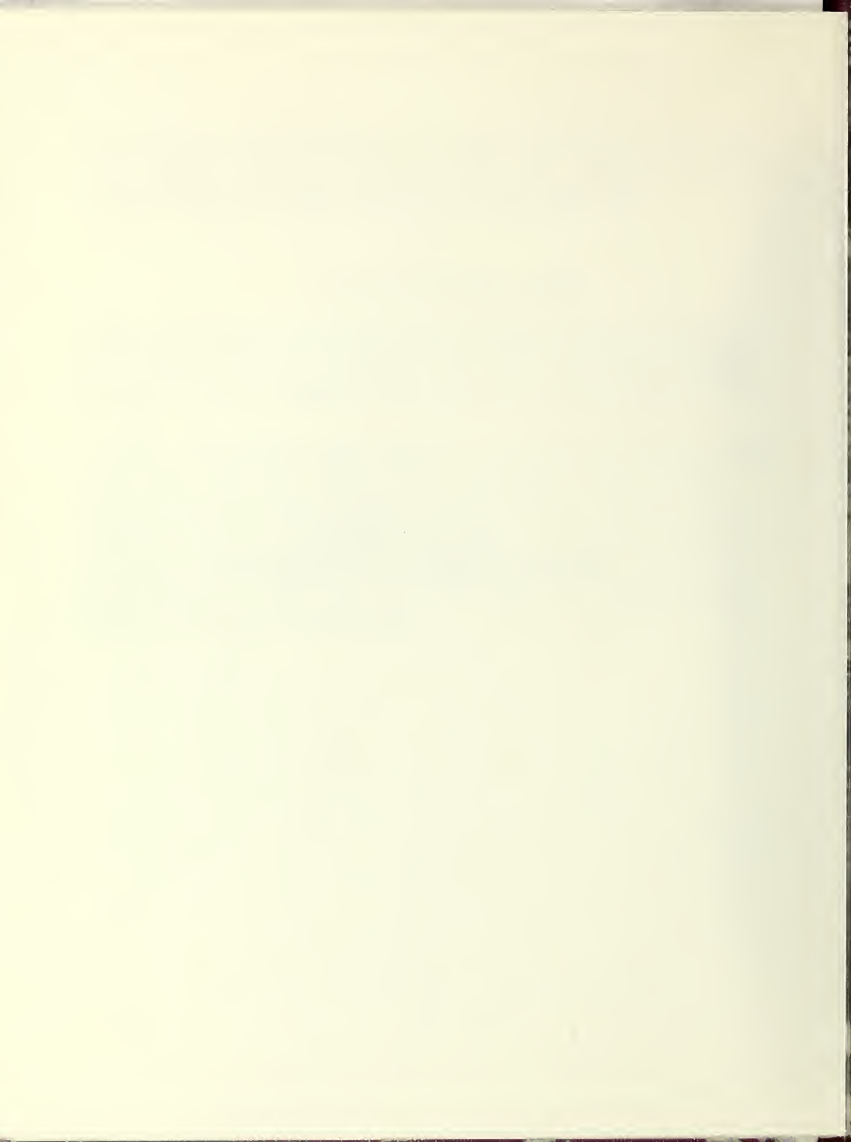
Current BART organization reflects a management structure to effectively carry out the charges of the District and its policies. Fourteen department managers report directly to the General Manager who in turn reports to a nine-member elected Board. As Board appointed officers, three of the department managers also report directly to the Board of Directors. These are the General Counsel, the Director of Finance, and the District Secretary.

The Board is the legislative body of the District which determines all matters relating to BART policy. Each year the Board of Directors adopts goals and objectives as part of the SRTP cycle. This policy serves as a guide to management in budgeting for and organizing BART's labor force (consisting of 2,198 employees as of December 1981) so that desired levels of performance may be achieved. Additionally, progress towards implementing important programs and capital improvements is continually monitored and reviewed. Other projects continue to be identified as part of the SRTP process in an effort to improve BART's effectiveness and operating performance even further. The Project Review Board, composed of key department managers, plays an important role in this process by recommending to the General Manager project priorities based on staff analysis and evaluation of District needs.

* * *

CHAPTER I:

**STATUS OF FY 1981/82
OPERATING PERFORMANCE AND CAPITAL OBJECTIVES**





PROGRAM AREA REVIEW

BART system performance is measured in terms of Board adopted Districtwide objectives for both operations and capital development. As reported in the previously submitted SRTP's for FY's 1980/81 and 1981/82, objectives are presented in a program area format in order to highlight the linkage between District goals and departmental responsibilities. Operating performance objectives have been identified for each of ten program areas for FY 1981/82. In this chapter, the status of each is reviewed on a program area basis for the period July-December 1981. Also included are highlights of events which had an impact on District operations for the same period. A section entitled "FY 1981/82 Performance Prognosis and Concerns" is included for each program area which addresses likely performance for the entire 1981/82 fiscal year given current trends. Also contained in this section is an identification of important areas of performance and capital development to be addressed in the FY 1982/83 SRTP update presented in Chapter II of the plan.

Status for the operating performance objectives is summarized in a separate table following the program area review on pages 22 and 23. Additional tables, starting on page 24, summarize progress towards achieving the capital projects called out in the FY 1981/82 objectives set.

Program Area A: Basic System Service and Capacity

Weekday service continues to be provided under the October 1980 revised close-headways schedule which calls for on-line train requirements of 42 during peak periods, 39 for midday operations, and 14 for 2-route night service. Similarly, scheduled weekend service remains unchanged this year with 31 on-line trains required for Saturday daytime service and 14 on-line trains for Saturday night and all day Sunday service.

As of December 1981, BART's operating fleet consisted of 137 A's and 296 B's. Four a.m. pre-peak car availability averaged 108 A-cars and 255 B-cars for the July-December 6-month period (versus 102 and 260 A- and B-car availability objectives for the same period). This actual availability compares to the maximum car schedule (for afternoon peak period operations during December) of 102 A-cars and 253 B-cars and represents 78.8% and 85.5% of the operating A- and B-car fleet, respectively.

Actual peak period Transbay capacity averaged 98.2% of scheduled trains and 97.2% of scheduled cars. This is significantly above the 97% train and 95% car throughput objectives.

Based on representative data, load factors for the first half of FY 1981/82 averaged 1.36 for peak hour operations (versus a 1.30 objective), 1.15 for the balance of the peak period (achieving the 1.15 objective), and 0.76 for midday service (versus a 1.05 objective). These load factors represent systemwide averages and, as such, do not reflect the rather wide range of values recorded for individual routes. During the October-December quarter, for example, peak hour load factors ranged from a high of 1.48 on the Concord and Fremont/Daly City lines to a low of 1.16 on the Richmond/Fremont line.

SCHEDULED SYSTEM CAPACITY (As of December 31, 1981)

	C O M M U T E			W E E K D A Y		SATURDAY DAYTIME	SATURDAY NIGHT	SUNDAY/ HOLIDAY
	AM PEAK	MIDDAY	PM PEAK	NIGHT				
NUMBER OF TRAINS								
Concord/Daly City	13	10	13	7	8	7	7	7
Fremont/Daly City	10	10	10	*	8	*	*	*
Richmond/Daly City	9	9	9	*	7	*	*	*
Fremont/Richmond	10	10	10	7	8	7	7	7
Total On-Line	42	39	42	14	31	14	14	14
Spares	9	7	9	7	#	#	#	#
Total Required	51	46	51	21	#	#	#	#
NUMBER OF A-CARS								
Concord/Daly City	26	20	26	14	16	14	14	14
Fremont/Daly City	20	20	20	*	16	*	*	*
Richmond/Daly City	18	18	18	*	14	*	*	*
Fremont/Richmond	20	20	20	14	16	14	14	14
Total On-Line	84	78	84	28	62	28	28	28
Spares	18	14	18	14	#	#	#	#
Total Required	102	92	102	42	#	#	#	#
NUMBER OF B-CARS								
Concord/Daly City	102	25	102	24	16	15	29	29
Fremont/Daly City	67	12	67	*	15	*	*	*
Richmond/Daly City	23	9	30	*	7	*	*	*
Fremont/Richmond	25	10	25	7	8	7	7	7
Total On-Line	217	56	224	31	46	22	36	36
Spares	29	8	29	10	#	#	#	#
Total required	246	64	253	41	#	#	#	#

* No service on these routes during these times.

Spare requirements are a yard option for weekend service. A minimum of one train per yard is kept as a ready spare.

FY 1981/82 Performance Prognosis and Concerns

While it appears that the Transbay throughput and car availability objectives will be achieved for FY 1981/82, peak period load factors are likely to exceed objectives in view of continued strong patronage growth because of limitations on lengthening or adding peak period trains for the next several years. Conversely, off-peak load factors may remain below objectives due to limitations on the extent to which train lengths can be changed during the day.

Continued above forecast patronage has placed a premium on peak hour capacity, particularly on the Concord and Fremont/Daly City lines where all scheduled peak hour trains are already at their maximum 10-car limit. Reduced crowding on these lines (and the ability to accommodate higher patronage at desired load factors) will require additional peak hour capacity which can only be provided by additional cars and increasing the number of on-line trains. Further, sharply increasing electrical energy costs have led to intensified efforts to achieve the 1.05 off-peak load factor objective. BART's ability to realize this, however, is greatly impaired as a result of the inability to store trains in the Westbay, the A- and B-car consist requirement which restricts train sizing maneuvers to the three Eastbay yards, and the impracticality of expanding yard staff to carry out continuous train consist changing (i.e. labor costs would more than offset energy and maintenance savings).

Program Area B: Reliability

Service quality continued to improve this year based on performance for key reliability measures.

Scheduled train runs completed averaged 98.6% for the July-December period (above the 97% objective).

Peak period train on-time performance equalled the objective level of 93.0%. For daily operations, on-time averaged slightly higher, at 93.7%, but below the 95% objective.

A peak period delay monitoring program was started in February 1981. Train performance was very favorable during this period in terms of both delay events and the number of trains delayed. The number of delay events causing trains to be detained 10 minutes or more averaged 1.85% of actual trains run during the 120 minute period (1.20 events). This is considerably better than the 3% maximum delay event objective (1.95 events). The number of trains actually delayed 10 minutes or more averaged 4.75% of trains run during this timeframe (3.08 trains). This compares to an objective of 7% for the peak period train delay rate (4.55 trains). Each delay causing event thus resulted in an average of 2.57 delayed trains during July-December 1981.

This year's objective for passenger off-loads calls for achieving a 6-month average incident rate per 1000 car-hours of 0.90 due to vehicle and wayside equipment and 0.10 for operations and miscellaneous causes. As of December 1981, the 6-month rates were 1.38 for equipment and 0.22 for operations and miscellaneous causes. These rates translate to approximately 5 off-loads per typical weekday due to equipment with 0.8 others as a result of operations and miscellaneous causes.

Performance for automatic fare collection equipment was very favorable as measured by the AFC maintenance technician rate. AFC performance equalled the objective rate of 0.35 incidents per 1000 trips, or approximately 62.5 incidents per average weekday for the July-December 1981 period. AFC performance as measured by the newly established availability standards did not fare as well, however. The 6 a.m. availability rates for entry/exit gates and for ticket vendors are reported to have averaged 92.5% and 84.5%, respectively for July-December 1981. This compares to 6 a.m. availability objectives of 98% for entry/exit gates and 95% for ticket vendors. As a result of a considerable time lag for data entry, actual AFC availability appears to be significantly higher than these reported rates.

FY 1981/82 Performance Prognosis and Concerns

BART reliability has dramatically improved within recent years with current efforts continuing the overall task of modifying and "fine-tuning" system components to achieve more stringent reliability standards. Considering the current level of system performance as measured by the Board adopted reliability objectives, it appears that the specified standards for scheduled train runs completed, delay events, trains delayed, and AFC incidents will be achieved by June 1982. Other standards relating to peak period and daily on-time performance and AFC availability appear to have a good chance of being achieved, or coming within a few percentage points of the desired performance levels. The achievement of the off-load objective, however, will depend upon the timeliness of CPUC approval of manual cab signaling (MCS was assumed to be operational under the current objective). Once in service, this important reliability improvement will greatly enhance BART's capability to maintain normal or near-normal service under a variety of component malfunctions. Without MCS, however, it is most likely that off-load rates will continue to be in excess of the current objective. Additionally, higher off-load rates will negatively impact on-time performance as a result of "slow train" movement in currently mandatory 25 mph road-manual speed.

As service is expanded beyond the current 42-train level to provide increased system capacity, future efforts in the area of reliability will need to focus on sustaining performance at current objective standards. Further improvement will also be required for selected indices such as for off-loads and delays.

Program Area C: Safety and Security

Performance relating to patron safety and security is very favorable as indicated by the rates for both accidents and crimes which were well below the stated objectives. As of December 1981, the 12-month average accident rate was 19.0 incidents per million trips (versus an objective of 21.3). Despite a slight upturn for November and December 1981, the long-term rate of patron accidents has been declining. Actual incidents increased 12.6%, from 849 accidents during calendar 1980 to 956 in 1981. For the current number of annual incidents, 212 (22.2%) occurred within stations with the remaining 744 (77.8%) accidents related to train operations.

The 12-month average patron related crime rate for the past 30 months has fluctuated between 18.76 incidents per million trips during February 1980 to a low of 14.26 in July 1979. The 12-month average rate has been declining since June 1981, from 18.45

incidents per million trips to 16.17 for December 1981 (versus a current objective of 20.8 incidents per million trips). Actual incidents of patron related crime increased 3.7%, from 783 during calendar 1980 to 812 for 1981.

Employee safety is measured in terms of the number of injuries occurring which result in the loss of 8 or more working hours. The current objective calls for a maximum of 211 such incidents during FY 1981/82, or an average of 105.5 for a 6-month period. Between July and December 1981, a total of 115 lost-time injuries were reported.

FY 1981/82 Performance Prognosis and Concerns

Based on current performance and trends, it appears that the objectives for patron accidents and crimes will be achieved by June 1982. Despite the increasing number of incidents for both these measures, patronage growth will tend to offset these increases resulting in overall declining rates.

Performance relating to employee lost-time injuries is somewhat below standard to date. Considering the current number of incidents, however, achievement of this objective is quite possible, contingent upon a modest reduction for these occurrences during the coming months.

Patron and employee safety and security have always been of paramount concern to the District. The many safety improvements implemented to date reflect this concern. Future efforts will need to continue to work towards minimizing the potential risks related to mass transit, particularly with increasing patronage.

Similar considerations hold true for security. Compared to older rail transit systems, crime on BART has remained at a relatively low level. Future efforts, however, will need to focus on the effective deployment of BART police as the number of BART patrons and the likelihood of crime continue to increase.

Program Area D: System Access

Improved station access is a key concern for the realization of the system's full potential. The District's multi-modal Access Plan addresses systemwide needs on a station-by-station basis to assist in increasing patronage consistent with on-line capacity. During July 1981 the District Board of Directors adopted the third and fourth phases of BART's Access Plan. The 10-year program contained in these two phases calls for the implementation of pedestrian, automobile, transit, and carpool improvements at 21 stations. Access needs for the remaining 13 stations are addressed in the previously adopted phases of the plan.

An additional aspect of the District's access needs is being addressed by a plan for improving BART express bus service. The focus of this plan will be to minimize operating costs, increase patronage and revenue for both bus and rail, and to provide an effective alternative for automobile access to existing rail stations (as an interim measure until rail extensions are brought on-line). The primary means to achieve these

goals are to decrease express bus travel times; develop park/ride lots on proposed rail extension station sites; improve schedule coordination with BART trains and other transit services; and to effectively manage the express bus service through continual monitoring, evaluation, and refinement.

Numerous express bus improvements have been implemented during the July-December 1981 period in support of the above goals. These include:

- o Additional peak period service on the "M" and "U" express routes (September 1981)
- o Revised Q-line service with direct access to Hilltop Shopping Mall in Richmond (September 1981)
- o New J-line service linking Hercules, Pinole, and Rodeo to El Cerrito del Norte station (December 1981)
- o Extension of U/P-line service along Stoneridge Drive and Foothill Road in Pleasanton (December 1981)
- o Extension of D-line service to Stoneridge Shopping Center in Pleasanton (December 1981)
- o Increased Q-line service (see above) from 1 to 2 runs per hour (December 1981)

Other transit coordination efforts, transfer improvements, and special needs implemented this fiscal year include:

- o District Board approval of a six-month extension of the Loma Ranger van-shuttle which links the Mira Loma residential district to Glen Park station in San Francisco (December 1981)
- o Continued progress towards implementing a joint BART/MUNI pass by November 1982
- o Start-up of the installation of priority seating signs in each BART car to request that seats closest to car doors be made available to elderly and mobility impaired persons (December 1981)

Planned station signing improvements, as called for under the Passenger Information and System Signing Project, have been temporarily suspended as of December 1981 due to federal funding cutbacks.

According to the 1981 BART Latent Demand and Public Awareness Survey, 40% of survey respondents expressed a great need for expanding station parking facilities. Access planning efforts recognize this need which is most critical for outlying suburban stations. Projects completed between July and December 1981 which address the deficiency include:

- o A new 42-space gravel surface parking lot at Orinda station (August 1981)
- o Additional 272 spaces provided with parking lot re-striping at Concord, Pleasant Hill, Walnut Creek, Lafayette, Orinda, and Fremont (December 1981)
- o Expansion of BARTPOOL to 2900 participants at nine stations.

Results of the most recent parking space utilization survey (taken during June 8-14, 1981) indicate an average noontime auto space occupancy of 96% systemwide. The current parking space inventory includes 21,649 spaces, of which 21,119 (97.6%) are District-owned.

FY 1981/82 Performance Prognosis and Concerns

Progress will proceed for those access projects for which resources have already been committed. The timely implementation of other improvements, however, depends largely on the provision of additional funding. Future efforts will need to focus on securing funds through conventional sources as well as developing more innovative arrangements in concert with the private sector, particularly in view of reduced federal commitments.

Progress in the area of improving inter-operator transfers is being addressed this fiscal year with the May 1982 publication of a revised BART & Buses brochure. This updated reference guide will provide current information regarding transit connections from all BART stations.

Program Area E: Financial and Operational Efficiency

Favorable financial performance for the first six months of FY 1981/82 resulted in operating and farebox ratios of 50.9% and 45.4% respectively. Continued above forecast patronage, high interest income on investments, and stringent budget controls have assisted in achieving this level of performance.

Net operating revenues were 11.6% above forecast for the July-December 1981 period. Net passenger revenues alone were 10.3% above budget.

Total operating expenses were 3.5% below budget. These expenses include the District's Express Bus Program which were 31.3% above budget, due largely to higher than estimated AC Transit charges. The District is reviewing the additional charges in accordance with the District's contract with AC Transit.

Rail expenses alone were 5.0% below budget. This, in conjunction with above forecast patronage, assisted in achieving a rail cost per passenger mile of 15.3¢. This is 13.1% below the budget forecast of 17.6¢.

Absenteeism, as measured by the paid sick leave rate, is currently at 3.54%, slightly above the 3.50% objective. This equates to 9.2 paid days annually per employee versus an objective of 9.1 days.

FY 1981/82 Performance Prognosis and Concerns

Despite above budget Express Bus Program expenses (which are currently under review), it appears that all of the Districtwide financial objectives will be achieved for the 1981/82 fiscal year. Continued high inflation, however, may erode this positive financial position if increasing costs outpace patronage and revenue growth.

Although electrical power costs are within budget to-date this fiscal year (which would not have occurred had the CPUC approved rate increases as proposed), these expenses are rising more than twice as fast as the general price level. With this trend expected to continue, future efforts will need to continue to identify and implement strategies which can lead toward even greater operational efficiency in order to minimize the impact of any additional electrical rate increases.

Reducing absenteeism is critical to improving overall efficiency and productivity. The achievement of this year's 3.5% paid sick leave rate objective by June 1982 is uncertain at this time due to high seasonal variations for the monthly rate. However, the sick leave buyback program appears to have had some impact on reducing absenteeism as indicated by a downward trend starting in January 1980. Should this trend continue, the 3.5% objective could very well be achieved.

Program Area F: Patronage and Travel Promotion

System patronage as measured by average weekday trips has increased steadily and continuously since the start of Transbay service in September 1974. For the entire period, growth averaged 5.6% annually. This long-run growth rate was achieved despite two fare increases totaling more than 56%. Recently, annual growth has occurred at a 15% rate.

GROWTH OF BART AVERAGE WEEKDAY PATRONAGE SINCE START OF TRANSBAY SERVICE		
<u>Period</u>	<u>Average Total Weekday Trips</u>	<u>Compound Annual Growth Rate</u>
November 1974- November 1978	122,937 150,458	5.2% ^a
November 1978- November 1980	150,458 156,624	2.0% ^b
November 1980- November 1981	156,624 180,277	15.1% ^c
November 1974- November 1981	122,937 180,277	5.6%

^a Includes effect of 21% fare increase, November 3, 1975.

^b Includes effect of 35% fare increase (June 1980), Transbay Tube Fire (January 1979), work stoppage (September-November 1979), and start of close headways service (July 1980).

^c Reflects impact of service adjustment (October 1980), federal gasoline price decontrol (January 1981) and off-peak marketing efforts (FY 80/81).

There are three principal factors responsible for this recent upturn above the long-run rate. Service improved significantly after the close headways schedule revision made in October 1980, with an impact on ridership within three months. Then, federal decontrol of gasoline prices in late January 1981 apparently caused many motorists to reevaluate their commuting options, causing an even more immediate impact on BART ridership. These two factors were further reinforced by BART off-peak promotional efforts during 1981.

By late 1981, BART average weekday patronage was approaching the level projected 10 years earlier for "full service" operation in 1975 (see page 14). Although BART was six years late in realizing the forecast level because of a variety of reliability problems and constraints on capacity, it is worth noting that the "full service" estimates assumed considerably shorter headways and greater capacity than are now being provided. The original forecast anticipated 6-minute route headways and 2-minute minimum headways during peak periods versus the 15-minute route headways and 3.75-minute minimum headways currently being provided. Based on BART's strong showing to date despite these problems, it is very likely that ridership will increase substantially when planned capital improvements enable significant capacity expansion during the latter 1980's.

As indicated on page 14, the correspondence of actual to forecast ridership on a segment-to-segment basis is fairly close. Transbay trips exceed forecast, especially on the Concord and downtown Oakland lines. Travel within San Francisco and the Eastbay is about as anticipated, except for a significant shortfall among Eastbay trips to downtown Oakland. This situation should improve, however, in view of the large increase in new office space either planned or actually under construction in the downtown area.

Limits on near-term growth have apparently not been reached based on indicators of either line-haul capacity or system access. The two heaviest traveled routes are those serving downtown San Francisco from Concord and Fremont. During 1981, all peak period Concord trains were scheduled at maximum length (10-cars) as were all Fremont Transbay trains during the peak hour. Despite these capacity limits being reached, peak hour ridership increased 17% - 22% during the year on both routes as well as on the remaining (Richmond/Daly City) Transbay route. Higher than targeted load factors have resulted from this growth and the inability to lengthen or schedule more trains on the two most heavily patronized routes (see page 15).

All system stations experienced patronage growth over the last year, suggesting that access constraints have not yet become critical. It is worth noting that all Concord line stations exceeded the system average growth rate despite the acknowledged shortage of desired parking facilities (see page 16).

BART marketing efforts between July and December 1981 have focused on promoting off-peak travel to major sporting and entertainment events including those held at the Coliseum and Paramount Theatre in Oakland and numerous theaters, museums, and auditoriums in San Francisco. As in the past three consecutive years, special weekend and holiday fares were in effect between Thanksgiving and New Years to promote even greater system usage. This year, the range of BART fares was reduced from \$0.50-1.75 to \$0.25-1.45, for an average fare reduction of 26%.

COMPARISON OF 1975 BART PATRONAGE ESTIMATES
AND REPRESENTATIVE NOVEMBER 1981 ACTUAL DATA

	CONCORD - ROCKRIDGE	RICHMOND - ASHBY	FREMONT - LAKE MERRITT	MACARTHUR - OAKLAND WEST	SUBTOTALS	DALY CITY - EMBARCADERO	TOTALS
CONCORD - ROCKRIDGE	40(N) 3,600(W) 1,164(P) 526(R) 3,102(C)						
RICHMOND - ASHBY	741(N) 2,354(W) 5,981(P) 1,000(R) 1,907(C)	2,938(N) 2,472(W) 5,074(P) 2,749(R) 5,490(C)					
FREMONT - LAKE MERRITT	437(N) 2,815(W) 2,940(P) 1,547(R) 1,635(C)	3,854(N) 4,588(W) 9,040(P) 4,190(R) 6,452(C)	10,100(N) 8,264(W) 21,127(P) 9,340(R) 10,958(C)				
MACARTHUR - OAKLAND WEST	3,331(N) 13,051(W) 12,055(P) 7,044(R) 5,219(C)	8,078(N) 13,658(W) 28,296(P) 11,561(R) 6,322(C)	13,430(N) 15,370(W) 43,807(P) 14,604(R) 8,714(C)	1,312(N) 3,582(W) 9(P) 1,498(R) 627(C)			
					<u>Eastbay</u> 44,261(N) 69,754(W) 129,493(P) 54,059(R) 50,426(C)		
DALY CITY - EMBARCADERO	11,027(N) 28,828(W) 11,682(P) 20,052(R) 33,071(C)	14,317(N) 20,671(W) 20,504(P) 15,484(R) 14,754(C)	34,286(N) 38,427(W) 24,884(P) 36,715(R) 27,186(C)	8,509(N) 25,723(W) 20,780(P) 16,707(R) 17,239(C)	<u>Transbay</u> 68,139(N) 113,649(W) 77,850(P) 88,958(R) 92,244(C)	<u>Westbay</u> 72,783(N) 35,663(W) 51,153(P) 48,133(R) 41,635(C)	<u>System</u> 185,183(N) 219,066(W) 258,496(P) 191,150(R) 184,305(C)

SOURCES:

(N) NCTDP - 1967
(W) Wilbur Smith - 1970
(P) Parsons, Brinckerhoff
Quade & Douglas - 1965
(R) Revised Estimate - 1971
(C) Current Actual - Nov 1981

Note: All figures are in average
weekday trips.

GROWTH OF PM PEAK PERIOD/PEAK DIRECTION TRANSBAY RIDERSHIP

TIME PERIOD/ROUTE	RIDERSHIP		PERCENT CHANGE		LOAD FACTOR	
	<u>APR-JUN 1981</u>	<u>JUL-SEP 1981</u>	<u>APR-JUN JUL-SEP</u>	<u>APR-JUN OCT-DEC</u>	<u>APR-JUN 1981</u>	<u>OCT-DEC 1981</u>
Peak 60 Minutes						
Concord/Daly City	6,048	6,631	9.6	22.5	1.42	1.32
Fremont/Daly City	4,263	4,591	7.7	17.5	1.36	1.37
Richmond/Daly City	1,548	1,833	18.4	26.1	1.24	1.21
Subtotal	11,859	13,055	10.1	21.2	1.37	1.32
Balance of Peak Cycle						
Concord/Daly City	5,014	5,392	7.5	9.5	1.16	1.27
Fremont/Daly City	3,117	3,090	-0.9	1.8	1.01	1.07
Richmond/Daly City	1,773	1,941	9.5	20.2	0.96	1.12
Subtotal	9,904	10,423	5.2	9.0	1.07	1.17
Total Peak Period Transbay	21,763	23,478	7.9	15.6	1.22	1.25
						1.35

STATION VOLUME COMPARISON FOR FEBRUARY 1981 AND 1982
(Based on representative faregate exit data)

LINE & STATION	FEBRUARY 1981	FEBRUARY 1982	ADDITIONAL TRIPS	PERCENT CHANGE
SAN FRANCISCO:				
Embarcadero	17,197	19,686	2,489	14.5
Montgomery St.	18,075	22,859	4,784	26.5
Powell St.	11,149	11,454	305	2.7
Civic Center	8,059	10,022	1,963	24.4
16th St.	2,654	2,766	112	4.2
24th St.	3,821	4,186	365	9.6
Glen Park	3,485	3,949	464	13.3
Balboa Park	4,540	5,588	1,048	23.1
Daly City	8,793	9,547	754	8.6
Subtotal	77,773	90,057	12,284	15.8
OAKLAND CBD:				
MacArthur	2,721	3,233	512	18.8
Rockridge	2,597	3,021	424	16.3
19th St.	6,580	7,230	650	9.9
12th St.	6,139	7,045	906	14.8
Lake Merritt	2,601	3,405	804	30.9
Oakland West	2,705	3,068	363	13.4
Subtotal	23,343	27,002	3,659	15.7
RICHMOND:				
Ashby	1,645	2,102	457	27.8
Berkeley	7,709	8,310	601	7.8
North Berkeley	1,810	2,363	553	30.6
El Cerrito Plaza	1,999	2,455	456	22.8
El Cerrito Norte	3,320	4,139	819	24.7
Richmond	2,092	2,312	220	10.5
Subtotal	18,575	21,681	3,106	16.7
CONCORD:				
Orinda	1,842	2,344	502	27.3
Lafayette	2,296	2,590	294	12.8
Walnut Creek	4,401	5,015	614	14.0
Pleasant Hill	4,089	5,140	1,051	27.5
Concord	5,867	7,110	1,243	21.2
Subtotal	18,495	22,199	3,704	20.0
FREMONT:				
Fruitvale	4,003	4,370	367	9.2
Coliseum	2,714	3,350	636	23.4
San Leandro	2,854	3,313	459	16.1
Bay Fair	3,759	4,123	364	9.7
Hayward	3,921	4,570	649	16.6
South Hayward	2,251	2,554	303	13.5
Union City	2,987	3,524	537	18.0
Fremont	4,891	5,141	250	5.1
Subtotal	27,380	30,945	3,565	13.0
SYSTEM TOTAL	165,566	191,884	26,318	15.9

In conjunction with the publication of MTC's Regional Transit Guide this fall, the District released to the public its "Fun Goes Further on BART", a new entertainment guide to recreation, sports, shopping, and other key points of interest served by the system.

In response to these promotional efforts and BART's high level of train service performance, patronage continued to run above forecast. Total trips for the July-December 1981 period were 26,062,604, 7.0% above forecast, and 14.5% above the same period last year. Average weekday patronage was 178,477, 8.3% above forecast. This level of ridership was almost evenly divided between the 4-hour peak and 14-hour off-peak periods, 89,320 versus 89,157 respectively. While peak period patronage averaged 6.1% above forecast, off-peak promotional efforts and BART's ability to absorb higher ridership during this period, resulted in a 10.7% above forecast average for off-peak travel. The current ridership objective relating to off-peak travel promotion is to realize a 3% increase above forecast.

Consistently high ridership assisted in achieving numerous new patronage records, particularly during the latter half of the 6-month period as noted below:

o <u>Highest Day</u>	
Thursday, October 15, 1981	201,555*
o <u>Highest Weekday Trips</u>	
Monday, December 7, 1981	200,489
Tuesday, December 22, 1981	194,295
Wednesday, December 2, 1981	193,130
Thursday, October 15, 1981	201,555
Friday, October 9, 1981	196,166
o <u>Highest Monthly Weekday Average</u>	
December 1981	181,930
o <u>Highest Weekly Average (weekdays only)</u>	
December 7 to 11, 1981	190,896
o <u>Highest Monthly Total Trips</u>	
October 1981	4,540,391
o <u>Highest Annual Total Trips</u>	
Calendar year 1981	50,215,531
*Since the December 31, 1981 cut-off point for the performance evaluation herein, BART recorded its all-time record of 213,745 trips on Monday, January 25, 1982.	

Results of the 1981 BART Latent Demand and Public Awareness Survey were made available during October. The survey included 1,020 telephone interviews with District residents to determine both user and nonuser perceptions of BART as related to train service, advertising, and media usage. Key findings of the study include:

- o 84.5% of all respondents have used BART at least once.
- o The most common trip purposes for infrequent BART riders (those who use the system less than once a week) are for entertainment, visiting, and shopping.
- o Those respondents who use BART at least once a week do so because of speed and cost.
- o If all commuters who could use BART did so, potential ridership would then be 3 times the current level.

Sampling procedures called for by the system cleanliness, employee courtesy, and announcement accuracy objectives are currently under development.

FY 1981/82 Performance Prognosis and Concerns

Public response to BART's dramatically improved level of reliability over the past two years coupled with rising automobile expenses and increased highway congestion, have resulted in an accelerated ridership growth rate. This trend has had very significant financial impacts as previously discussed and should result in even higher patronage records for the second half of the current fiscal year.

A key concern, however, is the very limited ability to accommodate future additional peak period ridership beyond the current level at current load factor objectives (with the exception of reverse commute travel). Until additional capacity can be provided, promotional efforts will consequently need to continue to focus on off-peak and reverse commute travel.

Program Area G: Affirmative Action

Current objectives for Districtwide workforce representation call for not less than 33.7% for minorities and 27.6% for females. The most recent Minority and Ethnic Data Report indicates 2,198 BART employees of which 1,054 (48.0%) are minorities and 500 (22.7%) are females.

The District entered into contracts with minority and female owned businesses amounting to \$1,568,534 between July and December 1981, or 12.7% of the total contract volume let for the 6-month period (versus an objective of 20%).

FY 1981/82 Performance Prognosis and Concerns

Workforce representation for females has improved significantly within recent years with regard to both overall percentages and distribution by job classification. Current Districtwide female representation, however, is still approximately 5% under the desired objective (presently equal to 107 positions). Given current job turnover and the rate of new hires, it appears unlikely that this year's 27.6% objective will be achieved. Given the currently adopted Affirmative Action Plan, efforts will need to continue to increase the percentage of female employees as well as achieving a more representative balance with regard to workforce distribution by job category.

The 20% MBE objective could be achieved this fiscal year if the contracts let for the January-June 1982 period result in an MBE participation of approximately 28-30%.

Program Area H: Extension Service and Capacity

District efforts this fiscal year have focused on the refinement of extension plans and coordinating overall planning efforts with local agencies.

The District Board of Directors adopted a preferred BART extension alignment and station sites for the Pittsburgh-Antioch rail corridor. A multi-agency Light Rail Transit Study was initiated in August for the purpose of evaluating the adopted alignment against other modal alternatives. The results of this study are to be made available following its completion during February 1982.

The BART Board also adopted a motion concerning extension right-of-way facilities expenditures. This action prioritized future acquisitions and directed staff to submit grant applications to MTC for the funding of both priority I and II expenditures. Two such applications were submitted in December 1981. The first was for \$9.6 million from the State Guideway Program for Warm Springs extension preliminary engineering, right-of-way acquisition, and part of final engineering for a one-station extension to the Irvington District of Fremont. Also submitted through the State Guideway Program was a \$6.7 million application for the funding of preliminary engineering work for the Pittsburgh-Antioch extension. These funds will also be used for right-of-way acquisition and part of the final engineering work for a one-station extension to the planned North Concord/Martinez station adjacent to Port Chicago Highway and SR-4.

Activities relating to the Livermore-Pleasanton extension focused on investigating potential station sites for a Castro Valley station. Also regarding this extension, the Pleasanton City Council approved a General Plan Amendment in August 1981 which changed the proposed BART alignment from downtown Pleasanton to an I-580 alignment running north of the downtown area.

FY 1981/82 Performance and Concerns

Continued refinement and coordination of extension plans which address the full range of transportation, land use, and cost impacts will be required.

Prospects for extending the BART system are primarily contingent upon the availability of adequate funding. The current federal posture towards capital funding for transit has led to an increasing likelihood, at least for now, of added funding responsibilities at the local level. This decreased level of federal funding support is expected to lead to delayed starts and longer construction phasing for extension implementation.

Program Area I: Joint Development

Efforts in the area of joint development have focused on three primary program tasks:

- o Assessing BART's real property assets including air rights and identifying potential marketing/implementation strategies
- o Developing site-specific plans in conjunction with local jurisdictions
- o Carrying out student architectural design competition for specific stations

During the July-December 1981 period, the BART Board of Directors authorized the General Manager to enter into a professional services agreement with a consultant to assist staff in assessing the relative marketability of all station sites and to identify potential development strategies. Consultant selection is expected by the end of April 1982 with work to begin during the following month. Additionally, the District executed formal agreements with local jurisdictions for specific station area land use studies in Pleasant Hill and El Cerrito.

During the July-December 1981 period the District also executed a professional services agreement for consultant services to organize and carry out a student architectural design competition focusing on air-rights development for Walnut Creek, Oakland, and Coliseum Stations.

Joint development staff also participated on various technical advisory committees concerning the Oakland West Intermodal Facility, the West Campus area in Berkeley, and the Coliseum Area Industrial Complex.

FY 1981/82 Performance Prognosis and Concerns

Planning efforts will need to continue to focus on identifying potential development strategies in concert with the private sector and local agencies. Progress in implementing BART's evolving joint development plans will enhance the District's financial position by providing a new source of revenue through the sale or lease of air rights. Increased commercial and residential development adjacent to BART stations as contemplated by the joint development program will also strengthen the market base for BART service. Joint development is also directly linked to extension planning efforts wherein future developments and BART are considered simultaneously.

Program Area J: Performance Data Collection and Reporting

Data continues to be collected and evaluated as part of the District's ongoing performance monitoring and assessment efforts. Key performance reports have been prepared and transmitted to the District Board of Directors, Department Managers, and other appropriate staff and outside agencies. These reports include the Monthly Patronage Report, Monthly Budget Performance Report, Quarterly Financial Statements, Quarterly Performance Report on System Objectives, and the Quarterly Operations Performance Report.

FY 1981/82 Performance Prognosis and Concerns

The regularly published reports listed above provide essential financial and system performance information to both management and the District Board of Directors, assisting them in the overall decision-making process. Efforts will need to continue to make these reports available in a timely manner as well as providing other key information as required. This includes continuing to exchange performance information with other transit operators on a regular basis and working with MTC, APTA, and UMTA to improve and streamline standardized reporting procedures.

* * *

PERFORMANCE OBJECTIVES

STATISTICAL SUMMARY

PERFORMANCE OBJECTIVES STATISTICAL SUMMARY: JULY-DECEMBER 1981

OPERATING PERFORMANCE OBJECTIVES ^a		OCT-DEC 1981	JUL-SEP 1981	PERCENT CHANGE ^b	OCT-DEC 1980	PERCENT CHANGE ^b	YEAR- TO-DATE	OBJECTIVE LEVEL ^c	PERCENT ^d OBJ. LEVEL
A1.	Four route weekday service	4	4	0.0	4	0.0	4	4	100.0
A2.	Load factors: ^e	1.41	1.31	(7.6)	NA	--	1.36	1.30	95.6
	Peak 60 minutes	1.19	1.11	(7.2)	NA	--	1.15	1.15	100.0
	Balance of peak period	0.78	0.75	4.0	NA	--	0.76	1.05	72.4
A3.	Off-peak period ^f	98.1	98.3	(-0.2)	NA	--	98.2	97.0	101.2
	Peak period/peak direction Transbay throughput (\$): Trains	97.8	96.7	1.1	NA	--	97.2	95.0	102.3
A4.	Cars	105	110	(-4.5)	107	(-1.9)	108	102	105.9
	Average monthly 4 a.m. car count: A-cars	259	251	3.2	243	6.6	255	260	98.1
B1.	B-cars	98.4	98.7	(-0.3)	95.9	2.5	98.6	97.0	101.6
	Scheduled train runs completed (\$)	93.3	94.1	(-0.8)	91.3	2.0	93.7	95.0	98.6
B2.	Train on-time performance (\$): ^g Daily	92.5	93.5	(-1.0)	92.4	0.1	93.0	93.0	100.0
B3.	Peak period	1.86	1.83	(0.03)	NA	--	1.85	3.00*	162.2
	Peak period delays exceeding 10 min (\$): ^h Delay events	4.57	4.90	-0.33	NA	--	4.74	7.00*	147.7
B4.	Trains delayed	NA	NA	--	NA	--	NA	TBD	--
	Patron Trips on-time (\$) ⁱ	1.38	NA	--	NA	--	1.38	0.90**	65.2
B5.	Offloads (6 month rate --Inc./ 1000 car-hrs): Equipment	1.60	NA	--	NA	--	1.60	1.00**	62.5
Total									

- a. Letter and number designations refer to the full objective set. Letter references denote corresponding program area.
- b. Objectives measured in terms of percentages are reported as the difference in their quarterly values. All other objectives are reported as the percentage change in their absolute values. Unfavorable changes are noted within parentheses and decreases with a minus sign.
- c. (***) Objective levels are performance averages slated for achievement during the period July 1981 to December 1981 unless noted by (*) or (**). These values are targeted for achievement by January 1982 and June 1982, respectively.
- d. Calculated by dividing the year-to-date average by the desired objective level, where a maximum value is desired. The reciprocal of this calculation is taken where a minimum value is the desired objective.
- e. Load factors have been aggregated to reflect a system average at each route's maximum load point. Refer to the Load Factor table presented in the Supplemental Data section (see Appendix C) for individual route averages.
- f. Off-peak period factors are for weekday/midday trains only and represent the average of the highest loading for each midday train.
- g. "On-time" is defined as the scheduled run time plus 5 minutes.
- h. "Delay events" are the primary causes of one or more train delays. "Trains delayed" are the total number of trains impacted by the primary delay events. Rates are expressed as per 100 train runs (excluding cancelled dispatches).
- i. A computerized program to monitor patron trips on-time is currently under development. A performance level has not been established to date.

PERFORMANCE OBJECTIVES STATISTICAL SUMMARY: JULY-DECEMBER 1981

OPERATING PERFORMANCE OBJECTIVES ^a		OCT-DEC 1981	JUL-SEP 1981	PERCENT CHANGE ^b	OCT-DEC 1980	PERCENT CHANGE ^b	YEAR- TO-DATE	OBJECTIVE LEVEL ^c	PERCENT ^d OBJ. LEVEL
B6.	AFC performance: Incidents/1000 trips	0.36	0.34	(5.9)	0.44	-18.2	0.35	0.35	100.0
	6 a.m. entry/exit gate availability (\$)	92.4	92.7	(-0.3)	NA	--	92.5	98.0	94.4
	6 a.m. ticket vendor availability (\$)	86.4	82.4	4.0	NA	--	84.5	95.0	88.9
G1.	Patron related crime (annual rate --Incidents/million trips) ^j	16.2	17.6	-8.0	17.3	-6.4	14.6	20.8	142.5
G2.	Patron accidents (annual rate --Incidents/million trips) ^j	19.0	18.1	(5.0)	19.9	-4.5	19.4	21.3	109.8
G3.	Employee lost-time injuries	54	61	-11.5	48	(12.5)	115	105.5	91.7
E1.	Farebox ratio (\$)	44.7	46.2	(-1.5)	45.1	(-0.3)	45.4	40.0	113.5
E2.	Rail cost per passenger-mile (¢)	15.6	15.1	(3.3)	15.6	(0.1)	15.3	17.8	116.3
E3.	Paid sick leave (\$-- sick hrs paid/straight-time hrs paid)	3.48	3.61	-0.13	3.96	-0.48	3.54	3.50	98.9
F1.	Average weekday patronage (1000's): Daily	181,291	175,663	3.2	154,896	17.0	178,477	164,761	108.3
	4-hour peak	91,993	86,684	6.1	NA	--	89,320	84,214	106.1
	Off-peak	89,298	88,979	0.4	NA	--	89,157	80,547	110.7
F2.	Weekday off-peak travel (\$ above normal growth forecast)	8.9	11.5	(-2.6)	NA	--	10.7	3.0	356.7
F3.	Train and station area cleanliness	NA	NA	--	NA	--	NA	TBD	--
F4.	Public contact employee courtesy and helpfulness ^k	NA	NA	--	NA	--	NA	TBD	--
F5.	Service announcement accuracy ^k	NA	NA	--	NA	--	NA	TBD	--
G1.	District employment: ^l Minority (\$)	48.0	48.0	0.0	46.2	1.8	48.0	33.7	142.4
	Females (\$)	22.7	22.7	0.0	21.9	0.8	22.7	27.6	82.2
G2.	Minority business enterprise (\$)	12.2	12.8	(-0.6)	18.5	(-6.3)	12.7	20.0	63.5

J. Annual averages are based on 12 months^l data ending with the final month of each quarter.

Year-to-date rates are for the period July-December 1981.

K. Performance for these objectives is being analyzed with a standard to be determined at a later date.

L. Minority and female employee representation based on total full-time District work force.

CAPITAL PROJECT STATUS SUMMARY

CAPITAL PROJECT STATUS SUMMARY AS OF DECEMBER 1981

PROJECT NUMBER	CAPITAL PROJECT TITLE AND MILESTONE	OBJECTIVE DATE	CURRENT QUARTER STATUS
42--	VEHICLES 2nd generation transit vehicle, grant approval	Jun 81	Board approval to advertise for bid required. Letter of no prejudice requested.
41GF	Manual cab signalling - MCS, completion	Sep 81	In progress. Expected completion by August 1982.
41GJ	Track signal antenna cable harness, completion	Sep 81	Project completed during December 1981.
41EI	Vehicle fire hardening, award contract (assumes grant approval)	Feb 82	\$6 million pending with State. May request permission to advertise in February 1982.
41EE	Convert 15 A-cars to B-cars	Apr 82	Four cars remain to be completed. Expected completion by September 1982
41BH	Motor rewind upgrade; complete 260 additional motors	Jun 82	111 motors rewind this quarter. Y-T-D = 221 or 85% complete.
03CD	MAINLINE FACILITIES Electrification capacity study (yard & mainline), completion	Jul 81	Study completed during current quarter.
01Y	Warm Spring extension, submit preliminary engineering grant	Sep 81	Alternatives analysis waiver requested. \$9.6 million State Guideway Funding application submitted in December 1981.
xxxx	North Concord extension, submit preliminary engineering grant	Sep 81	Alternatives analysis waiver requested. \$6.7 million State Guideway Funding application submitted in December 1981.
91FB	Evaluate existing wayside facilities, completion	Oct 81	Status not reported.
11LC	Evasse chamber-vent fan mods (Glen Park), completion	Oct 81	Phase I complete. Project to be completed by January 1982.
05BD	Relocate Bonita-Milvia vent structure, completion	Oct 81	Completed in June 1981.
11R-	Daily City turnback, grant submission	Dec 81	SB-620/Article XIX application for phase I submitted during December 1981; requires environmental clearance.
07CB-	KE subway completion, (phase A) track & signal, completion	Feb 82	Track work completed during December 1981. Signalling is scheduled for completion by May 1982.
03FI	Redundant fans (BHT), completion	Mar 82	Procurement/contract portion of project started in July 1981. Project to be completed by September 1982.

CAPITAL PROJECT STATUS SUMMARY AS OF DECEMBER 1981

PROJECT NUMBER	CAPITAL PROJECT TITLE AND MILESTONE	OBJECTIVE DATE	CURRENT QUARTER STATUS
07CC-03FJ	MAINLINE FACILITIES (continued) KE aerial structures, completion Catwalk safety mods (BHT), completion	Apr 82 Jun 82	Completion date delayed four months to August 1982. Evacuation testing indicated modification not required.
03HE	STATION & ACCESS FACILITIES Gravel surfaced parking lot (Orinda), completion	Aug 81	Project completed on August 10, 1981; opened to public in September
01VC	Parking expansion - perm. paving (Union City), completion	Oct 81	Project completed in November 1981.
03SF	Compact lot restriping (C-line), completion	Oct 81	Project completed during current quarter.
01XF	Compact lot restriping (A-line), completion	Oct 81	Union City deleted from project. Fremont completed this quarter.
03SD	SNR right-of-way parking lot (Concord), completion	Dec 81	Project delayed pending HUD clearance.
11QB	Additional bus shelters (Daly City), completion	Mar 82	Installation/construction portion of project to start in March 1982 with completion as scheduled.
01WD	Transfer information center (Fremont), completion	Jun 82	Civil design complete. Requested engineering schedule. Caltrans approved additional \$146,000.
03RC	Transfer information center (Concord), completion	Jun 82	SB-620 3rd cycle interim application submitted. Caltrans approval pending.
xxxx	Train arrival signals at bus stops, completion	Jun 82	Project requires scope development.
01SS	SUPPORT FACILITIES Storeroom (Hayward Shops), design complete	Sep 81	Contract awarded; project completion by March 1983.
17H-	Regional administration center, start construction	Jan 82	Construction scheduled to begin by March 1982 with project completion by December 1983.

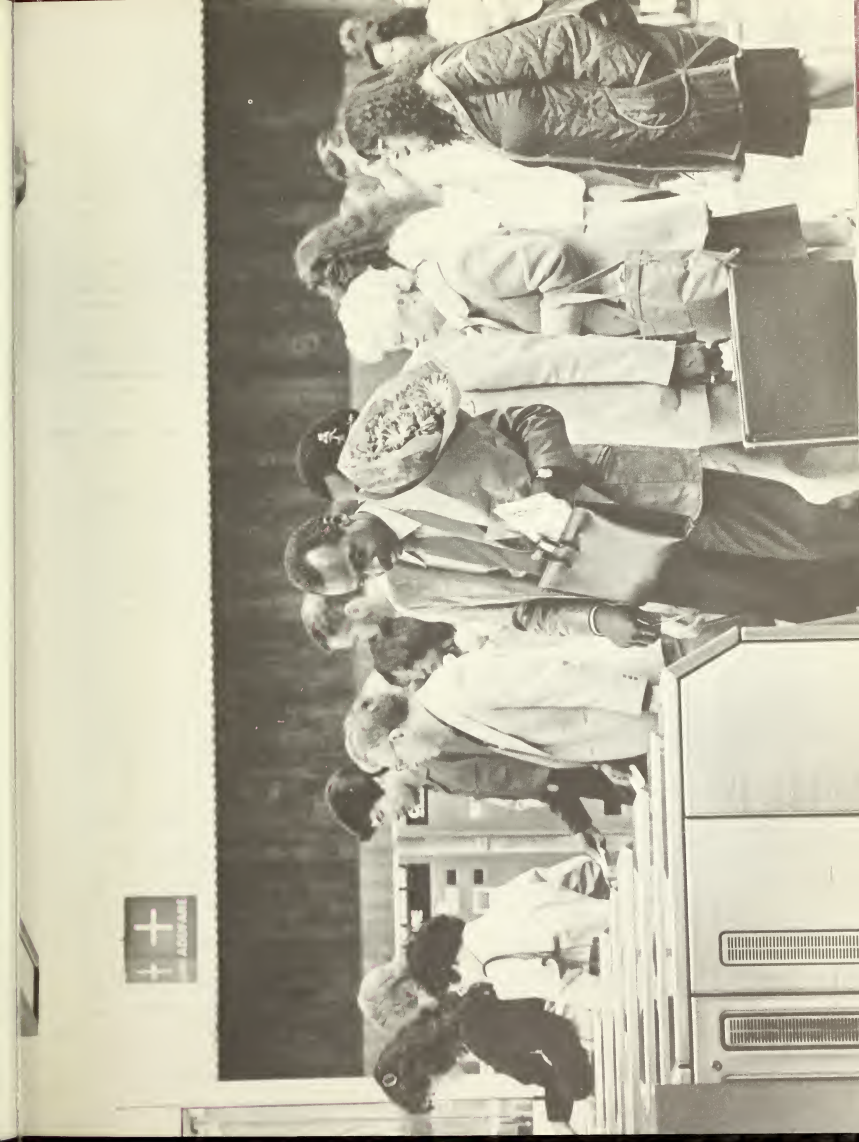
CAPITAL PROJECT STATUS SUMMARY AS OF DECEMBER 1981

PROJECT NUMBER	CAPITAL PROJECT TITLE AND MILESTONE	OBJECTIVE DATE	CURRENT QUARTER STATUS
1700A	SUPPORT FACILITIES Outside storage/track improvements (OKS), completion	Jun 82	Design 99% complete. Project completion scheduled for January 1983
20FE	TRAIN CONTROL Permanent B-points, design complete	Sep 81	Design work to start July 1982 with project completion by June 1983
20BH	Throughput improvement study, completion	Sep 81	Complete.
61--	ICS - Install development computer at LBL, completion	Dec 81	Bids over budget. Project under complete review by the General Manager.
xxxx	AFC & COMMUNICATION Radio frequency consultation - RADCOM - Phase II system specs, award contract - Train portables, delivery complete	Jul 81 Sep 81	Status not reported. Complete.
45BB	Replace IBM bill validators, completion	Aug 81	Project to be completed during June 1982.
45AF	Joint AQ/BART/MUNI pass - install hardware in SF, completion	Sep 81	Status not reported.
68BC	3rd generation cash computer, completion	Jun 82	Project to be completed during October 1982.
64E-	MISCELLANEOUS Labor management system - LMS, completion	Aug 81	Phase I complete. Phase II to be completed by August 1982.
64F-	Materials management - MMS, completion	Dec 81	Project is 85% complete.
64G-	Maintenance management & comp reliab - MARS, completion	Dec 81	Project is 85% complete.
03FC	Earthquake behavioral study, completion	Dec 81	Project completion scheduled for July 1982.

CHAPTER II:

FY 1982/83 SRTP UPDATE





District efforts during the upcoming five year period will need to focus on completing key capital projects required for increasing BART capacity while continuing to achieve high safety and reliability standards. The KE track, vehicle fire-hardening, ICS, new C-cars, wayside automatic train control (ATC) modifications, and the Daly City turnback are essential elements of this program. Their completion by mid-1987 will enable the District to increase system capacity 70% above present capabilities. Provision of this additional capacity is essential in view of the anticipated increase in regional travel brought on by the current and projected high growth rates for office space development in San Francisco, Oakland, Walnut Creek, Concord, and other BART served corridors where no significant highway capacity increases are planned. The projected service increases will allow BART to realize its inherent economies of scale by permitting a major expansion of capacity at a less than proportional increase in operating cost.

This chapter identifies key issues and underlying assumptions involved in developing the current SRTP, as capsulized above. Specific improvements are discussed and operating performance objectives identified on a program area basis.

* * *

KEY ISSUES AND ASSUMPTIONS

Based on the review presented in Chapter I, overall BART performance for the first half of FY 1981/82 was generally very favorable in terms of the objectives contained in the latest Short Range Transit Plan, and continued gains are expected for the remainder of this fiscal year. As indicated in the "Performance Prognosis and Concerns" sections above, a number of factors merit consideration in this year's SRTP update, and these can be summarized under the following:

- o Future demand
- o Adequate capacity
- o Service quality
- o Cost effectiveness and productivity
- o Program delivery

The following discussion focuses on these five key issue areas as the primary basis for identifying essential improvements that will permit continued favorable performance and the realization of the system's potential.

Future Demand

Given the strong long-term growth trend to date of 5.6% annually, and the sharp upturn in the rate last year of 15%, what kind of growth in ridership can be expected during the 5-year planning period? As will be discussed below, it seems reasonable to project that average daily patronage will increase at a 10% rate initially, with the rate gradually diminishing over time to the long-run trend rate. Detailed month-by-month ridership projections for FY 1982/83 are shown on page 28.

For purposes of this plan update, it is assumed that average weekday ridership levels and observed growth, before fare or service change impacts, will be as follows over the upcoming five-year period:

PROJECTED FY 1982/83 AVERAGE WEEKDAY PATRONAGE (in 1,000's)
BEFORE AND AFTER FARE INCREASE VS. FY 1981/82 ACTUAL

<u>Month</u>	<u>FY 81/82 Actual</u>	<u>FY 82/83 Forecast</u>		
		<u>Before Fare Increase</u>	<u>% Change</u>	<u>After Fare Increases^B</u>
July	173.6	192.9	11.1	184.9
August	176.0	194.2	10.4	186.2
September	177.5	195.4	10.1	187.3
October	181.6	197.2	8.6	189.0
November	180.3	195.8	8.6	187.6
December	181.9	197.6	8.6	189.4
January	186.1	200.4	7.7	192.1
February	191.9 ^A	199.9	4.2	191.6
March	188.0	201.2	7.0	192.9
April	192.4	202.6	5.3	194.1
May	190.9	203.8	6.8	195.3
June	189.3	205.2	8.4	196.7

A Reflects impact of 20% promotional fare reduction 10am - 3pm

B Assumes regionally coordinated fare increase.

<u>Fiscal Year</u>	<u>Annual Average Weekday trips</u>	<u>Annual Growth Rate</u>
1980/81	161,965	--
1981/82	184,100*	13.7%
1982/83	198,900	8.0%
1983/84	210,800	6.0%
1984/85	222,600	5.6%
1985/86	235,100	5.6%
1986/87	248,300	5.6%
*Estimated actual		

It is also assumed that peak period ridership will grow at the above rates, before fare or service change impacts, as will off-peak travel. The off-peak market will continue to be the focus of extra marketing efforts, however, and an additional 3% increase in off-peak riding is targeted for FY 1982/83.

What factors are likely to cause or support continued strong BART patronage growth? Expansion of central business district office space in both San Francisco and Oakland and, to a lesser extent in Walnut Creek and Concord, and related increases in employment are expected to continue during the planning period. Given existing residential development patterns, it is reasonable to assume that regional travel patterns will not change significantly, and that increased commuting volumes caused by expanded CBD employment will flow through the corridors served by BART.

Given the fact that parallel freeway routes are now at or near peak period capacity, and no significant expansion is scheduled to occur, a high proportion of new regional work trips are likely to be made by transit rather than automobile. Constraints on parking space expansion in the CBD areas and current high parking fees are expected to reinforce the trend toward transit.

BART's service reliability has improved substantially since the schedule revision in October 1980, and the impact of this improvement was reflected in growing ridership levels during 1981. Moreover, the previously expected seasonal dips in patronage have been absent over the last year as average weekday trips showed a steady month-to-month increase. Apparently, new riders who tried the system were pleased with the service and joined the growing ranks of regular commuters. As long as BART service is perceived to be practical and reliable, a solid base of frequent users can be expected.

A final factor to note is the impact of increases in auto operating costs on BART travel. Following the federal decontrol of gasoline prices in late January 1981, an almost immediate impact on BART patronage was observed. Average weekday trips increased by nearly 9,000 between January and February, during the season when system ridership typically remains virtually unchanged.

The outlook for gasoline price stability is uncertain at this time since this is largely contingent upon political conditions in the Middle East. Gasoline prices have been falling in recent months due to a short-term surplus, but this trend does not seem to have offset the trend of increasing BART ridership. With gasoline prices unlikely to

return to pre-1979 levels, BART demand is expected to continue to increase as prices level off and once again start to rise. As past experience has shown, any sharp gasoline price increase will likewise result in an immediate upturn in BART ridership.

Expectations concerning peak period ridership growth, particularly at each route's maximum load point, are the basic input to determining future service expansion and car requirements. As noted in Chapter I, peak period trips increased significantly between the second and fourth quarters of 1981. This occurred despite capacity limitations on the Concord and Fremont/Daly City routes.

Peak period travel projections for the five-year planning cycle are summarized on the following page. PM peak period, peak direction maximum load point demand estimates are shown for each route for the peak hour (60 minutes) and the balance of the peak train cycle (approximately 85 minutes). Demand estimates are presented for 1983 both before and after the expected impact of a BART fare increase which would match new levels anticipated on both AC Transit and San Francisco MUNI. Likewise, demand estimates for 1987 reflect responses to service with and without headway reductions anticipated for that year.

While BART's ability to accommodate any additional peak period riders in the primary demand directions is presently severely constrained, increased ridership is expected to continue as greater "flexitime" participation allows more commuters to ride BART during more lightly traveled times. Additional travel is also expected in the reverse commute direction, where BART capacity is readily available.

For reasons previously stated, noncommute BART ridership is also expected to increase significantly. Off-peak trains can readily be lengthened from the 3-5 car consists currently required, up to the 10-car limit. Substantial off-peak ridership can thus be accommodated by lengthening midday and evening trains.

The coordination of regional transit services and fares should also result in higher BART patronage, with the elimination of complicated transfer arrangements and pricing differentials. The convenience of the Fast Pass is also expected to result in more BART travel.

All of the above factors point toward increasing BART ridership, with a gradual "in-filling" for the lower demand midday and evening periods by a spreading of the peaks and greater reverse commute and off-peak utilization. The most recent BART Public Awareness and Latent Demand Survey (conducted in January and February 1981) indicates a potential commuter market three times the level of early 1981, or an average weekday ridership of approximately 415,000.

While this level of patronage is unrealistic today in terms of BART's current on-line capacity and access limitations, real growth pressures are expected to be strong during the next several years before the completion of programmed capital improvements which will permit significant increases in system capacity.

PM PEAK TRAIN CYCLE MAXIMUM LOAD POINT DEMAND

Basis for Estimate of On-Line Car Requirements

PM PEAK HOUR	Oct-Dec 1981	June 1983			June 1986 ^b	June 1987	
		Before New Fare	After New Fare	June 1984 ^a		Current Headways ^b	1/8-Min. Minimum ^c
Daily City/Concord	7411	7782	8264	8396	8866	9888	10692
Daily City/Fremont	5009	5259	5585	5674	5992	6682	7225
Daily City/Richmond	1952	2050	2177	2212	2336	2605	2817
Transbay	14372	15091	16026	16283	17194	19175	20734
Richmond/Fremont	1822	1913	2032	2065	2181	2432	2629
BALANCE OF PM PEAK CYCLE							
Daily City/Concord	5491	5765	6123	6221	6570	7325	7325 ^d
Daily City/Fremont	3173	3332	3538	3594	3796	4233	4578
Daily City/Richmond	2131	2238	2376	2414	2549	2843	3074
Transbay	10795	11335	12037	12230	12915	14401	15574
Richmond/Fremont	1420	1491	1583	1608	1698	1894	2048

a Assumes 6% annual growth.

b Assumes 5.6% annual growth.

c Reflects 8.1% demand increase based on 16.6% headway reduction @ E = 1.4.

d No headway reduction in assumed service scenario.

Adequate Capacity

In view of the likelihood of continued patronage growth, adequate capacity looms as perhaps the most pressing issue now facing BART. This factor will be especially acute during the next several years.

As indicated on page 33, the match between current capacity and demand is fairly evenly balanced among the four BART routes. The percentage distributions by route of average car throughput and patronage during October-December 1981 are virtually equivalent during the peak hour. The relative share of demand on the Concord and Fremont/Daly City routes exceeds the proportion of available capacity allocated to the two routes but, since no trains can be added or extended during this period because of headway and train length limits, no adjustments can be made on these routes during the peak hour.

During the balance of the peak cycle, some expansion of capacity on the Concord/Daly City route seems warranted. This route carries 45.0% of the ridership with only 40.6% of the allocated capacity. Since virtually all trains on this route operating during the balance of the peak cycle are 10 cars in length, an additional train is required.

A description of proposed peak period service for the next five years is presented on page 34, with peak period service defined by the number of trains on-line by route and resulting headways in minutes. Peak period service is shown as expanding from 42 on-line trains currently to 43 trains by mid-1982, through the addition of one train to the Concord/Daly City route during the balance of the peak cycle. This extra train represents the maximum extent of additional peak period capacity which can be provided between now and mid-1986 because, effectively, there are no more cars available for scheduling beyond the service increment just described. This conclusion is underscored by the information shown on page 35.

This tabulation indicates the projected operating fleet requirements of the fire hardening project and the resulting available fleet. The impact of the A-car conversion program can be seen in the increased number of B-cars expected to be available by June 1982. However, given the requirements of the fire hardening program, the net result in terms of available B's will be to maintain the December 1981 level through June of 1985. Obviously, this will have a bearing on system load factors given the foregoing demand projections.

Several important capital improvements are expected to be in place which should permit reduction of the minimum scheduled headway to 3-1/8 minutes early in FY 1986/87. These include vehicle fire hardening, central train control computer enhancement, the delivery of new revenue vehicles, and miscellaneous wayside ATC improvements. Reduction of the minimum headway will result in 6.25 and 12.5 minute route headways, and a corresponding increase in the number of trains on-line which will permit service expansion on all four routes. This service expansion will increase the number of trains on-line from 43 to 54.

Likewise, it is assumed that a further reduction in the minimum headway and corresponding service increases will be possible by mid-1987 (beyond this five-year planning period) with the completion of Phase I of the Daly City turnback project. The next service level anticipated after mid-1987 is an increase from 54 to 64 trains on-line, with a decrease in the scheduled minimum headway to 2.5 minutes. Further reduction of the scheduled minimum headway to 2.25 minutes (or operation of the entire peak cycle at 2.5-minute headways) will permit increasing the number of trains on-line to 75 (or 73).

DISTRIBUTION OF TRAINS, CARS AND PASSENGERS PAST MAXIMUM LOAD POINTS:
 REPRESENTATIVE PM PEAK DATA FOR
 OCTOBER-DECEMBER 1981

Numerical Distribution

Route	Peak Hour		Balance of Peak Cycle		Total Peak Period	
	Trains	Cars Passengers	Trains	Cars Passengers	Trains	Cars Passengers
Daly City-Concord	7.0	69.4 7,411	6.0	58.0 5,491	13.0	127.4 12,902
Daly City-Fremont	4.7	46.9 5,009	5.1	38.7 3,173	9.8	85.6 8,182
Daly City-Richmond	3.9	21.4 1,952	5.7	25.1 2,131	9.6	46.5 4,083
Richmond-Fremont	4.1	21.9 1,822	5.3	21.1 1,420	9.4	43.0 3,242
Total, Maximum Load Points	19.7	159.6 16,194	22.1	142.9 12,215	41.8	302.5 28,409

Percentage Distribution

Route	Peak Hour		Balance of Peak Cycle		Total Peak Period	
	Trains	Cars Passengers	Trains	Cars Passengers	Trains	Cars Passengers
Daly City-Concord	35.5%	43.5% 45.8%	27.1%	40.6% 45.0%	31.1%	42.1% 45.4%
Daly City-Fremont	23.9	29.4 30.9	23.1	27.1 26.0	23.4	28.3 28.8
Daly City-Richmond	19.8	13.4 12.1	25.8	17.6 17.4	23.0	15.4 14.4
Richmond-Fremont	20.8	13.7 11.3	24.0	14.8 11.6	22.5	14.2 11.4
Total, Maximum Load Points	100.0	100.0 100.0	100.0	100.0 100.0	100.0	100.0 100.0

DESCRIPTION OF PROPOSED PEAK PERIOD SERVICE
Headways and Trains On-Line

Headways (In Minutes)	December 1981	June 1982	June 1983	June 1984	June 1985	June 1986	June 1987
Minimum Sustainable	3.50	3.50	3.50	3.25	3.25	3.25	3.00 ^a
Minimum Scheduled	3.75	3.75	3.75	3.75	3.75	3.75	3.125 ^a
Basic Route	15.00	15.00	15.00	15.00	15.00	15.00	12.5/15.0
<u>Trains On-Line, By Route</u>							
Concord/Daly City	7	7	7	7	7	7	10
Peak 60 Minutes	6	7	7	7	7	7	9
Balance of Peak							
Fremont/Daly City							
Peak 60 Minutes	5	5	5	5	5	5	7
Balance of Peak	5	5	5	5	5	5	6
Richmond/Daly City							
Peak 60 Minutes	4	4	4	4	4	4	4
Balance of Peak	5	5	5	5	5	5	6
Transbay							
Peak 60 Minutes	16	16	16	16	16	16	21
Balance of Peak	16	17	17	17	17	17	21
Richmond/Fremont							
Peak 60 Minutes	5	5	5	5	5	5	6
Balance of Peak	5	5	5	5	5	5	6
Total							
Peak 60 Minutes	21	21	21	21	21	21	27
Balance of Peak	21	22	22	22	22	22	27
TOTAL	42	43	43	43	43	43	54

^a Anticipates completion of and capabilities provided by the following projects: 90 new C-cars, ICS, vehicle firehardening (to allow removal of vent separation requirement).

PROJECTED OPERATING FLEET, FIRE HARDENING
REQUIREMENTS AND AVAILABLE FLEET

Total Fleet Size	Dec 1981	June 1982	June 1983	June 1984	June 1985	June 1986	June 1987
A-Cars	139	136	136	136	136	136	136
B-Cars	293	303 ^a	303	303	303	303	303
C-Cars	0	0	0	0	0	50	150
Total	432	439	439	439	439	489	589
Vehicles Out for Fire Hardening							
A-Cars	0	5 ^b	5	5	5	0	0
B-Cars	0	11 ^b	11	11	11	0	0
Total	0	16 ^b	16	16	16	0	0
Net Fleet Size							
A-Cars	139	131	131	131	131	136	136
B-Cars	293	292	292	292	292	303	303
C-Cars	0	0	0	0	0	50 ^c	150 ^c
Total	432	423	423	423	423	489	589
Available Fleet							
A/C-Cars (@ 85%)	118	111	111	111	111	158	243
B-Cars (@ 90%)	263	262	262	262	262	272	272
Total	381	373	373	373	373	430	515

a. Assumes completion of A-car conversion program

b. Cars unavailable for scheduling in anticipation of fire hardening program commencing 1983

c. Addition of these vehicles to the fleet will permit service expansion after date indicated

Using the projections of available vehicles shown on page 35, future car requirements can be estimated from the data presented on pages 31 and 34. As shown on page 37, projected car requirements are indicated by route based on anticipated PM peak demand, current load factor objectives, and the proposed service expansion scenario illustrated on page 34. Allocation of cars by the current load factor objectives would require more than the available vehicles.

Vehicle requirements would be even greater if required capacity could be provided on the Concord and Fremont/Daly City routes during the peak hour. The numbers in brackets indicate the projected deficiency of cars at a 1.3 load factor resulting from headway and platform length constraints which preclude scheduling more or longer trains. This condition is expected to persist throughout the planning period, on the Concord and Fremont/Daly City routes. Mitigating measures which might be considered in the interim include active promotion of flex-time employment options to shift some commuting out of the peak, a peak period fare surcharge to shift some demand to off-peak periods, or lengthening of headways on the other two routes to permit shorter headways and more trains for Concord and Fremont/Daly City. With or without these measures, load factors are most likely going to rise in the next four years, and District policy should be revised accordingly.

An allocation of available vehicles based generally on equalization of load factors across all peak period trains is shown on page 38. Under this strategy, load factors could be kept under 1.35 on most routes until 1985, as indicated on page 39. The peak hour deficiencies still remain on the Concord and Fremont/Daly City routes for reasons already stated. Projected peak hour demand on the Concord and Fremont/Daly City routes, given no increase in peak hour capacity, would produce load factors in excess of 1.6, an unrealistically high level for financial planning purposes. Accordingly, capacity restraint analysis was performed on the demand figures shown on page 31, assuming no further growth on the Concord and Fremont/Daly City routes (beyond a 1.6 load factor) until additional capacity is provided. The revised demand projections are summarized on page 40. After mid-1986, load factors are expected to diminish as new revenue vehicles become available, and peak-period service is increased to 54 trains.

Considerations for adequate capacity are clearly at the forefront of District planning concerns within the current SRTP timeframe, with the timely implementation of already programmed major capital improvements being essential. Gradual revision of District load factor objectives appears unavoidable, and means should be explored to shift as much demand as possible to off-peak periods. Interim measures for marginal reductions in the minimum scheduled headway should also be explored so that one or two additional trains might be inserted into peak hour Transbay service without compromising existing performance standards. Note that these additional trains would have to be made up by a reallocation of vehicles from trains with lower load factors. The need for additional Transbay service during the peak hour is illustrated on page 41 where demand is expected to outpace available capacity (at a 1.3 load factor) to at least late 1986.

In view of current reliability performance and the projected strong future demand for BART service, provision of adequate capacity may replace service quality improvements as the top priority facing the District in the coming years.

PROJECTED CAR REQUIREMENTS BY ROUTE BASED ON ANTICIPATED PM PEAK DEMAND,
CURRENT LOAD FACTOR OBJECTIVES AND PROPOSED SERVICE EXPANSION

	Dec., 1981	June 1982	June 1983 ^a	June 1984	June 1985	June 1986	June 1987 ^c
Concord/Daly City							
Peak 60 Minutes	70[8]*	70[13]*	70[15]*	70[20]* ^b	70[25]* ^b	70[30]* ^b	100[14]*
Balance of Peak	58	70	70	70	70	70[4]* ^b	90
Fremont/Daly City							
Peak 60 Minutes	50[2]*	50[6]*	50[7]*	50[11]*	50[14]* ^b	50[18]* ^b	70[7]*
Balance of Peak	37	40	41	43	46	50	57
Richmond/Daly City							
Peak 60 Minutes	24	25	25	27	28	30	34
Balance of Peak	24	27	28	29	31	33	38
Richmond/Fremont							
Peak 60 Minutes	25	25	26	27	28	30	34
Balance of Peak	20	21	21	22	24	26	29
Total On-Line							
A/C-Cars	84	86	86	86	86	86	108
B/C-Cars	224	242	245	252	261	273	344
Total	308	328	331	338	347	359	452
Spares							
A/C-Cars	18	18	18	18	18	18	18
B/C-Cars	29	29	29	29	29	29	29
Total Required							
A/C-Cars	102	104	104	104	104	104	126
B/C-Cars	253	271	274	281	290	302	373
Total	355	375	378	385	395	406	499
Surplus (shortage)							
A/C-Cars	16	7	7	7	7	24	16
B/C-Cars	10	(9)	(12)	(19)	(28)	0	0
Total	26	(2)	(5)	(12)	(21)	24	16

* Number in [] for peak 60 minutes on Concord & Fremont/Daly City routes reflects projected deficiency at 1.3 load factor resulting from inability to schedule more/longer trains.

a After impact of regionally coordinated fare increase.

b Reflects load factor exceeding 1.6.

c Reflects 54-train service.

PROJECTED CAR ALLOCATION BY ROUTE
BASED ON ANTICIPATED PM PEAK DEMAND AND CAR AVAILABILITY,
REVISED LOAD FACTOR OBJECTIVES, AND PROPOSED SERVICE EXPANSION

	Dec. 1981	June 1982	June 1983 ^a	June 1984	June 1985	June 1986 ^b	June 1987 ^c
Concord/Daily City	70	70	70	70	70	70	100
Peak 60 Minutes	58	67	67	67	67	70	89
Balance of Peak							
Fremont/Daily City	50	50	50	50	50	50	70
Peak 60 Minutes	37	38	38	38	38	50	56
Balance of Peak							
Richmond/Daily City	24	25	25	25	25	30	30
Peak 60 Minutes	24	25	25	25	25	33	37
Balance of Peak							
Richmond/Fremont	25	26	26	26	26	30	30
Peak 60 Minutes	20	18	18	18	18	26	26
Balance of Peak							
Total On-Line	84	86	86	86	86	86	108
A/C-Cars	224	233	233	233	233	273	330
B/C-Cars	308	319	319	319	319	359	438
Total							
Spares							
A/C-Cars	18	18	18	18	18	18	18
B/C-Cars	29	29	29	29	29	29	29
Total Required							
A/C-Cars	102	104	104	104	104	126	126
B/C-Cars	253	262	262	262	262	302	359
Total	355	366	366	366	366	406	485
Surplus (shortage)							
A/C-Cars	16	7	7	7	7	24	30
B/C-Cars	10	0	0	0	0	0	0
Total	26	7	7	7	7	24	30

^a After impact of regionally coordinated fare increase.

^b Reflects 54-train service.

^c Reflects additional cars but no increase over current 43-train service.

PROJECTED PM PEAK TRAIN CYCLE AVERAGE LOAD FACTORS BY ROUTE
AFTER CAPACITY RESTRAINT ANALYSIS,
AND PLANNED SERVICE INCREMENTS

<u>Route</u>	<u>June 1982</u>	<u>June 1983</u>	<u>June 1984</u>	<u>June 1985</u>	<u>June 1986^b</u>	<u>June 1987^c</u>
<u>PM PEAK HOUR</u>						
Daly City-Concord	1.54	1.57	1.60 ^a	1.60 ^a	1.60 ^a	1.49
Daly City-Fremont	1.46	1.49	1.58	1.60 ^a	1.60 ^a	1.43
Daly City-Richmond	1.14	1.16	1.23	1.30	1.14	1.30
Transbay	1.45	1.47	1.53	1.55	1.51	1.44
Richmond-Fremont	1.11	1.13	1.20	1.26	1.07	1.22
Balance of PM <u>Peak Cycle</u>						
Daly City-Concord	1.25	1.27	1.35	1.43	1.38	1.14
Daly City-Fremont	0.98	1.00	1.06	1.12	1.11	1.14
Daly City-Richmond	1.24	1.27	1.34	1.42	1.13	1.15
Transbay	1.16	1.18	1.25	1.32	1.24	1.14
Richmond/Fremont	1.29	1.32	1.40	1.47	1.00	1.09

a. Assumed limit for capacity restraint analysis.

b. Reflects additional cars but no increase over current 43-train service.

c. Reflects 54-train service.

PM PEAK TRAIN CYCLE MAXIMUM LOAD POINT DEMAND
AFTER CAPACITY RESTRAINT ANALYSIS

Route	June 1982	June 1983 ^a	June 1984 ^b	June 1985 ^c	June 1986 ^c	June 1987 ^{c, e}
<u>PM PEAK HOUR</u>						
Daly City-Concord	7,782	7,921	8,064 ^d	8,064 ^d	8,064 ^d	10,692
Daly City-Fremont	5,259	5,353	5,674	5,760 ^d	5,760 ^d	7,225
Daly City-Richmond	2,050	2,087	2,212	2,336	2,467	2,817
Transbay	15,091	15,361	15,950	16,160	16,291	20,734
Richmond-Fremont	1,913	1,948	2,065	2,181	2,303	2,629
<u>Balance of PM Peak Cycle</u>						
Daly City-Concord	5,765	5,869	6,221	6,570	6,937	7,325
Daly City-Fremont	3,332	3,391	3,594	3,796	4,008	4,578
Daly City-Richmond	2,238	2,277	2,414	2,549	2,692	3,074
Transbay	11,335	11,538	12,230	12,915	13,637	14,977
Richmond/Fremont	1,491	1,517	1,608	1,698	1,793	2,048

a After impact of 13.1% fare increase

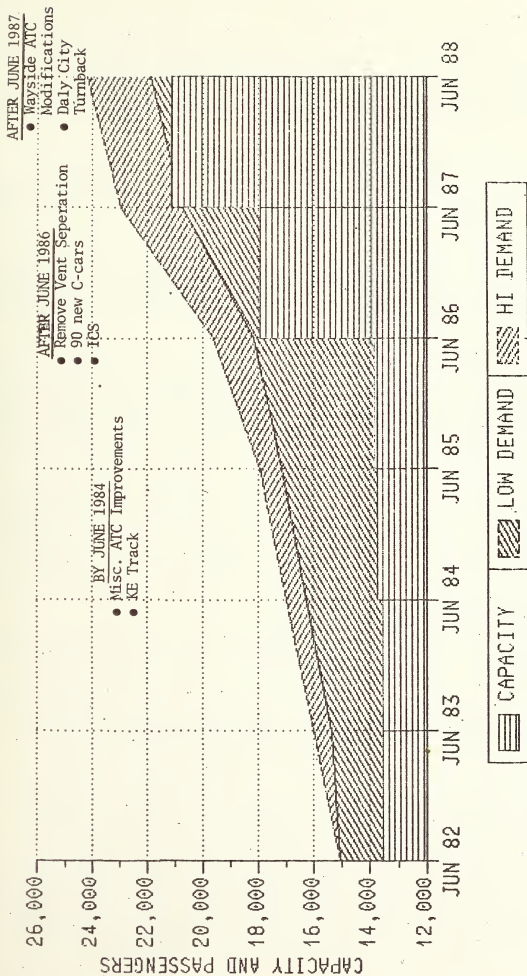
b Assumes 6% annual growth

c Assumes 5.6% annual growth

d Reflects impact of capacity restraint @ 1.6 load factor

e Reflects additional 8.1% demand increase based on 16.6% headway reduction & capacity increase

PK HOUR/PK DIRECTION TRANSBAY DEMAND* AND PLANNED CAPACITY (AT A 1.3 LF)



* Demand forecasts based on 6% annual growth to June 1984 and 5.6% thereafter. Low demand assumes a fare increase by June 1983, current service headways through June 1986, and 3-1/8 minute headways by June 1987. High demand assumes no fare increase, 3-1/8 minute headways by June 1986, and 2-1/2 minute headways by June 1987.

Service Quality

This change of emphasis in BART policy does not mean, however, that reliability can be taken for granted. Indeed, improved service quality is largely responsible for attracting and maintaining the addition to BART patronage experienced during 1981. Continued growth of BART ridership will depend heavily on the extent to which service quality can be maintained and improved.

The issue of service quality addresses system performance and its impact on patronage. Research in this area of transit performance indicates that ridership tends to be more responsive towards changes in service quality than in fares. BART patronage growth since October 1980 appears to support this finding (see page 12).

Because scheduling more trains on the system will alter the current operating environment, it will be essential to maintain system reliability while implementing capacity improvements. This concern is to be addressed by the System Performance Study which will identify achievable capacity and reliability objectives. This study is currently scheduled for completion by January 1984.

In the interim, further gains in the area of reliability will depend on continued improvement to BART's well established preventative maintenance procedures. Many improvements have been completed to date under the Reliability Improvement Program. Results of this effort are best exemplified by increased on-time performance, improved car and train throughput, and reduced incident rates for both passenger off-loads and AFC equipment.

These achievements have allowed BART to publish a train schedule for both evening and weekend service during which times reliability performance (primarily as measured by on-time performance) has consistently been above the stated objectives. A similar schedule for weekday operations will be increasingly desirable. Continued progress in the area of service reliability will need to focus on achieving this objective.

Cost Effectiveness and Productivity

Cost effectiveness and productivity are interrelated issues which address overall financial performance and the economies of providing expanded levels of service. Favorable performance in these, as well as for other areas, is directly dependent upon management's ability to formulate and implement effective programs which can keep pace with inflation. Recent trends for District financial performance indicate that this has in fact occurred, where stringent budget controls and above forecast revenues, in large part due to better service, have produced better than anticipated results.

Future operating budget considerations will be examined in detail below. However, several factors first need to be recognized in the general context of financial effectiveness.

Staffing costs comprise the largest component of total operating expense. While this is expected to decline somewhat as electrical power assumes a larger proportion, staffing cost is the one factor most directly under District control. Staffing levels materially affect labor cost, and to the extent that output can be increased without proportional increases in staffing, future labor cost increases can be held within the limits of available resources.

Secondly, all available information points to continued electrical power cost increases as much as perhaps twice or more the rate of increase for the general price level. As a result of this, District efforts will need to focus on developing operating strategies which can lead towards reduced levels of power consumption (i.e., reduced car-miles), while allowing for the achievement of load factor objectives through the provision of adequate capacity.

Finally, the planned restructuring of the BART Express Bus service should be carried out as scheduled. This component of expense has increased excessively in the past year, and its farebox ratio is well below the standard set for overall District operations.

On the funding side, increasing transit operator demands for regionally allocated discretionary funds are expected to severely limit BART's share of these resources. Additionally, capital funding limitations will require BART to continue to generate a portion of its capital funding requirements through operating financial performance in order to provide for essential system replacements and improvements. These limitations are expected to become more severe as federal support for capital is gradually reduced.

Continued pressure on the District's financial resources, due primarily to inflation and limited growth of funding sources, will further emphasize the need for efficient and effective operating strategies which incorporate innovative productivity incentives into the overall approach. Further, key capital improvements which can enhance current operational efficiencies will need to be completed in order to realize long-term economies and increased productivity. Both the Daly City turnback/storage facility and the new C-cars address this concern. In summary, BART must exploit every possible operating efficiency in order to reduce cost pressures and minimize the impact of required future fare increases.

Program Delivery

Realizing BART's inherent economies of scale and latent capacity potential by the end of this planning period is a realistic but challenging objective. Based on the projections noted above, it seems reasonable to expect significant growth in ridership if capacity increases can be delivered in a timely manner. These capacity increases depend heavily on implementation of the District's capital improvement program. The principal elements of the capital program have been well established for several years and include:

- o KE Track

The third downtown Oakland track (KE track) is required to increase capacity through the heavily traveled Oakland wye, where all four routes merge.

- o Vehicle Fire Hardening

The currently imposed CPUC subway vent separation requirement limits San Francisco line headways to 3.5 minutes, or 17 trains per hour. The removal of this restriction is contingent upon the timely completion of the vehicle fire-hardening program.

- o Central Train Control Computer

A new central train control computer will be required for operations exceeding the existing computer capacity limit of 49 on-line trains.

- o New Revenue Vehicles

At least 150 new revenue vehicles will be needed to service anticipated patronage growth. The new C-car will permit expansion of existing consists, addition of new trains, as well as efficient on-line sizing of trains.

- o Wayside ATC Modifications

Based on the recommendations of the System Performance Study, this project will address the removal of SORS and the utilization of the primary automatic train control system in order to achieve a 2.25-minute headway.

- o Daly City Turnback

Higher density train operations will require a more efficient and less time consuming train reversing facility at Daly City, where the minimum scheduled turnback time is now 3.75 minutes (versus a mid-1987 required minimum of 2.25 minutes).

Attainment of the increased capacity potential inherent in the BART system with the completion of these projects depends upon their joint implementation. Lacking one or more of these major components, the system will not be capable of performing at the required higher level of capacity. Timely funding and effective project management are therefore essential to assure the delivery of these important capital improvements as scheduled.

With appropriate qualification, the same kind of focus needs to be directed toward all significant District initiatives that either directly or indirectly affect the service provided to BART patrons. It is not enough, for example, to achieve a favorable expense variance if, as a result, a critical program is delayed. Budgetary considerations, although important, are no more important than the quality of service, and in the transit business, timeliness should be a paramount objective.

* * *

POLICY FRAMEWORK AND PLANNED IMPROVEMENTS

The policy framework identified in last year's S RTP continues to provide BART management and the Board of Directors with an effective mechanism for addressing the full range of District needs and activities. The general policy statements, embodied by the Board adopted goals, have thus been carried over into this year's plan update without revision. These are:

- o Continue to improve BART safety and emergency preparedness.
- o Improve the reliability and performance of the present BART system.
- o Operate within available funds without incurring an unfunded deficit.
- o Fund adequately and implement the necessary capital improvements and replacements to the system.

- o Maximize the contribution to operating costs from passenger revenues, consistent with reasonable fare levels, to achieve a farebox ratio above 40%.
- o Increase ridership and utilization of the \$1.7 billion BART investment in plant and equipment.
- o Consistent with the above, continue to expand service within feasible technical and financial limits, including improved peak-hour frequency of service and capacity where needed.
- o Coordinate with communities and public agencies and with other transit operators within the District and region the planning of service levels, operations and fares; improved system access, accessibility, and transfer facilities; joint development; and system extensions.
- o Make every effort to achieve District objectives for female and minority employment and for minority business enterprise participation.

Additionally, the program area concept continues to provide an effective linkage between the above goals and departmental responsibilities. As such, the ten program areas (as identified in Chapter I) have also been carried over into this year's plan.

With the foregoing information as a base, the discussion will now turn to the District's strategy for improving performance beyond current levels. Included are specific operating performance objectives for each program area along with required capital projects for objective achievement.

Program Area A: Basic System Service and Capacity

Central to meeting future patronage growth is the need for more cars and the ability to operate more on-line trains than is currently possible. To accomplish these two tasks, District efforts will continue to focus on the timely implementation of already programmed essential capital projects, which when completed, will permit a substantial expansion of BART capacity:

New C-Cars

The analysis of BART capacity requirements on pages 32 through 41 indicates that additional vehicles are vitally necessary to meet projected ridership growth during the five-year planning period. As indicated, peak period service cannot be expanded until the new C-cars are put in service. In the meantime, despite the completion of the A- to B-car conversion program, in September 1982, fleet capacity will be reduced by the fire-hardening program which requires removal of 5 A-cars and 11 B-cars between March 1983 and June 1985. This means that ridership growth will be accommodated by gradually increasing peak period load factors. Further, to maintain this maximum capacity, 85% A-car and 90% B-car availability will be required along with train and car throughput of 98% and 97%, respectively. Without the new C-cars, forecast patronage, if attained, will exceed system capacity, with load factors well above desired standards.

Daly City Turnback/Storage Facility

Once currently scheduled consists reach the 10-car limitation, more on-line trains will be required to increase capacity. This need has already occurred on the Concord and Fremont/Daly City lines during peak hours with maximum available capacity currently being provided and load factors continuing to increase as a result of persistent peak period patronage growth despite overcrowding. Due to current system constraints which limit minimum sustainable headways to 3.5 minutes, additional peak hour trains cannot be operated until essential improvements are in place. The Daly City turnback is a critical element required for reducing headways below current levels since it will provide a much more efficient terminal track configuration allowing for 2.25 minute headways. Prior to this project's scheduled completion in late 1986, plans call for extending the currently scheduled 3.75-minute headway into the "shoulders" of the peak period where 5-minute headways are now being provided.

Enhanced Central Train Control Computer

The central train computer in conjunction with various supporting wayside equipment provides for systemwide train supervision. The existing central computer is capable of monitoring the movement of up to 49 trains at any one time. Expansion of central control capabilities is needed to allow for on-line train operations exceeding this limit starting in mid-1986. Based on a review by the General Manager of the original integrated control system (ICS) specifications, current plans call for an enhancement of the existing system to be operational by early 1985. Once in place, this project will allow BART to operate 75 on-line trains initially, with the capability of expanding the control system for operating 115 trains.

Vehicle Fire-Hardening

As a result of the January 1979 Transbay Tube Fire and subsequent investigation, BART is restricted to operating no more than one train between any two subway air vents. This is a precautionary measure imposed to minimize the risk of smoke from a burning train being drawn past other trains. The removal of this restriction is anticipated following the completion of the District's fire-hardening program which is scheduled for completion by June 1985. Under this program all vehicle wall and ceiling liners and floors will be reconstructed to reduce flammability and toxic smoke emissions. Until this project is completed, widely spaced vents located in the Berkeley Hills Tunnel and on the San Francisco line between Glen Park and 24th Street stations limit headways to approximately 3.5 minutes in San Francisco and 4.5 minutes on the Concord line.

KE Track

The first phase of this project has already been completed with the 4th and Washington Street to 12th Street Station section in place. The entire new third track and related turnouts, however, will not be operational until June 1984 when the remaining section from 12th Street to MacArthur Stations is completed.

Wayside ATC Modifications

Increasing system capacity to required levels (by reducing minimum operational headways to 2.5 minutes) will require modifications to the existing ATC system. One of the primary purposes of the System Performance Study will be to identify specific modifications which will permit shorter headway operations. Required modifications are expected to be in place by the time the Daly City turnback is operational by late 1986.

All of the above projects are essential to increasing BART capacity such that by mid-1987, 64 on-line trains can be provided to meet patronage growth (22 trains above today's level). Until this time, the District will strive to improve performance within existing operational limitations. Revised operating performance objectives for the current five-year time period are summarized below. Supporting capital projects are summarized on pages 61 to 69.

BASIC SYSTEM SERVICE AND CAPACITY PERFORMANCE OBJECTIVES

FY 1982/83

1. Operate scheduled four-route weekday service with route headways of 15 minutes or less on each line during peak and midday periods.
2. Seek to maintain average weekday load factors in peak direction at each route's maximum load point of not over 1.3 during the primary peak-hour, 1.15 during the balance of the peak period, and 1.05 during off-peak service.
3. Operate weekday peak period Transbay service in the peak direction providing at least 98% of scheduled train throughput and 97% of scheduled car throughput on a monthly average basis.
4. Make available 104 A-cars and 267 B-cars for revenue service by 4 A.M. (weekdays).

FY 1983/84 to FY 1986/87

1. Operate four-route weekday service with the capability of providing sustained 3.125-minute headways by June 1986 reducing to 2.5 minutes by June 1987 following the completion of the first phase of the Daly City turnback.
2. Support the following weekday car requirements:

<u>Car Requirements</u>	<u>June 1984</u>	<u>June 1985</u>	<u>June 1986</u>	<u>June 1987</u>
A-Cars	104	104	104	115
B-Cars	262	262	272	272
C-Cars	0	0	30	98
TOTAL	366	366	406	485
On-Line	319	319	359	438
Spares	47	47	47	47
Fire Hardening	16	16	0	0
TOTAL	382	382	406	485
Total Fleet:				
A-Cars	136	136	136	136
B-Cars	303	303	303	303
C-Cars	0	0	50	150
TOTAL	439	439	489	589

Program Area B: Reliability

As stated in the issues section on page 42, improved reliability has greatly assisted in accelerating BART patronage growth substantially in excess of budget forecasts. It follows then, that the major thrust of this program area will be to improve the quality of service further and, at a minimum, to maintain performance standards as the number of on-line trains is increased. An important effort in this area is the System Performance Study. When completed in March 1984, the results of this effort will provide important information concerning BART's optimum service capabilities based on reliability, safety, and capacity criteria. In the interim, District efforts will focus on completing remaining projects included in the Reliability Improvement Program, in addition to other important improvements identified to further enhance system reliability. Key capital projects include:

Manual Cab Signaling

This project is essentially complete and has received CPUC approval. When operational, MCS will permit manual control of trains at normal or near-normal programmed speeds in the event of ATC failure. This will eliminate the current 25 mile per hour road manual constraint which often results in service delays.

New Vehicle ATC

This project will improve on-board automatic train control circuitry which will result in more reliable operation and smoother braking/accelerating profiles. This latter improvement should also result in electrical power savings.

Motor Rewind Upgrade

This project is designed to increase the useful life and reliability of traction motors by upgrading the armature coil copper section. Car availability is also enhanced by reducing the meantime between failures for car motors. This project is scheduled for completion by January 1985.

AFC Reliability Improvements

This project includes important modifications to bill validators and coin acceptors to improve AFC equipment performance beyond current levels.

Revised operating performance objectives for reliability are summarized below. Other capital projects addressing system reliability are identified on pages 61 to 69.

RELIABILITY PERFORMANCE OBJECTIVES

FY 1982/83

1. Complete 98% of all monthly scheduled dispatches.
2. Conduct operations such that on a monthly basis 95% of daily terminal-to-terminal runs are completed within 5 minutes of scheduled run times with at least 93% during the AM and PM peak periods for commute days.
3. Provide service such that 98% of peak period trains do not experience a primary delay exceeding 7 minutes and 94% are not delayed more than 7 minutes from all causes.
4. Report the monthly average percentage of all weekday patron trips within five minutes of their scheduled run times and compare it against a performance level objective (to be determined by June 1982).
5. Provide service such that passenger off-load rates remain at or below the following:

<u>Cause</u>	<u>Rate Per 1000 Car Hours</u>
Vehicle equipment	0.9
Wayside equipment	0.1
Operations & other	0.1
Total	1.1

6. Maintain the overall AFC technician maintenance incident rate at or below 0.30 incidents per 1000 passenger trips, and maintain or exceed a 6 AM average weekday availability rate of 95% for entry/exit gates and 90% for ticket vendors.
7. Maintain a 6 AM average weekday availability rate of 95% for elevators and escalators.

FY 1983/84 to FY 1986/87

1. At a minimum, maintain FY 1982/83 reliability objective level performance under higher density train operations pending additional improvements which may be identified by the System Performance Study.

Program Area C: Safety and Security

Efforts in the area of safety and security will concentrate on minimizing incidents of patron-related crime and accidents for both patrons and employees.

The effective deployment of BART police will continue to be the prime strategy for combating crime on trains and in station areas. An enhancement to the computerized management information system is currently under way for the purpose of accurate and detailed crime reporting as well as for the tracking and dispatching of police officers. This system is to be fully operational by September 1982.

In the area of patron safety, efforts will continue to implement the District's comprehensive emergency preparedness and life safety program. Key elements include:

Vehicle Fire Hardening

This important safety project will minimize vehicle flammability and toxic smoke emissions as noted on page 46 under Basic System Service and Capacity and is scheduled to begin by March 1983 with a June 1985 completion.

RADCOM

This project addresses systemwide communication deficiencies through frequency consolidation and other enhancements essential for effective communications for safe operation. Completion of this project is scheduled for December 1983.

Employee accidents are also an important concern with efforts to continue to focus on reducing the incidents of lost-time injuries as well as minimizing their impact on total employee lost-time. Key elements for accomplishing this task will be the continued provision of a safe work environment in conjunction with an effective job training program.

Updated operating performance objectives for Safety and Security are summarized below. Capital projects which will assist in achieving these objectives are identified on pages 61 to 69.

SAFETY AND SECURITY PERFORMANCE OBJECTIVES

FY 1982/83

1. Provide sufficient police coverage such that by June 1983 the rate of patron related crimes does not exceed 17.0 per million passengers.
2. Continue to provide an environment for patron circulation through trains and stations such that by June 1983 the accident rate does not exceed 17.7 per million passengers.
3. Reduce the total annual number of employee lost-time injuries to 211 or less.
4. Reduce the total annual amount of employee lost time due to injuries as a percent of time worked to 0.65 or less.

FY 1983/84 to FY 1986/87

1. Maintain a rate of patron related crime below those for District communities and other transit systems in the Bay Area and in other metropolitan areas.
2. Maintain employee lost-time and patron accident rates at or below the industry-wide average.

Program Area D: System Access

The District's multi-phased Access Plan will continue to provide guidance for implementing transit, automobile, and pedestrian access improvements. The District's Express Bus Plan also supports these efforts by calling for improved service linking existing BART station to key Bay Area travel corridors not presently served by rail. Accordingly, efforts for the upcoming five-year period will focus on realizing elements of these two plans which are scheduled for implementation during this timeframe. This includes:

Improved Transit Service Coordination

The District will continue to work closely with other Bay Area transit operators and MTC in assessing needs and coordinating services, fares, and inter-operator transfers. The BART/MUNI and BART/MUNI/AC passes are part of this overall effort designed to make transit more efficient and easier to use. Other elements include more frequent and direct express bus service, bus/rail interface improvements, increased availability of multi-lingual transit information, the development of transit information centers at key stations, new inter-city bus terminals adjacent to stations, and improved station signing. Additionally, the transportation needs for elderly, handicapped, and other minorities will continue to be addressed through both District and MTC advisory groups.

Automobile Access

Projects designed to enhance automobile access have been developed in coordination with local jurisdictions and cover a range of needs. Included are plans to expand participation in the BARTPOOL program as a means of increasing auto occupancy (thereby reducing the pressure for additional parking spaces). Additional on-site station parking is also planned, consistent with future line-haul capacity. As a supplement to on-site parking, satellite lots will also continue to be developed in conjunction with connecting shuttle bus services.

The primary objectives for the upcoming five-year period for access will thus be to:

SYSTEM ACCESS PERFORMANCE OBJECTIVES
<u>FY 1982/83</u> Implement the District's Access Plan and Express Bus Plan. <u>FY 1983/84 to FY 1986/87</u> Implement the recommendations contained in the District's Access and Express Bus plans.

Specific capital improvements and implementation schedules are summarized on pages 61 to 69.

Program Area E: Financial and Operational Efficiency

District efforts will focus on increasing productivity through continued stringent budget controls and enhancing operating strategies. Addressing both these areas is the District's Productivity Improvement Program which is a basic element of the SRTP (see Appendices A and B). Its implementation is therefore an important part of BART's overall strategy to improve financial and operating efficiency.

Stringent budget controls are necessary for holding costs down relative to inflation. Improved management techniques, including numerous enhancements to computerized information systems, have permitted the District to respond more quickly and effectively to its needs (see Program Area J: Performance Data Collection and Reporting, on page 59). Continued improvements to these systems should lead to even greater productivity and resultant cost savings.

Economies much beyond these, however, will be largely dependent upon the District's ability to more closely tailor service to demand. As noted in the issues section (page 42), electrical power costs are expected to continue to rise at more than twice the rate for the general price level. Accordingly, power as well as maintenance costs associated with excess car-miles represent one major area which needs to be addressed in order to realize greater operational efficiency and resultant cost savings.

Completion of the Daly City turnback and storage facility and acquisition of the new C-cars are two essential projects which address these needs. These improvements together will allow for Westbay train storage and on-line consist sizing. These capabilities are essential to reducing excess car-miles and achieving load factor objectives. This has direct cost implications for both power and maintenance expenses.

Additionally, recent tests of power consumption and regeneration on the M-Line point to the strong possibility that power consumption can be further reduced by limiting the amount of "over braking" that occurs in the existing onboard train control. Present circuitry often slows the train to below the commanded speed. The control system then detects this over compensation and speeds the train back up to the commanded speed. The new automatic train control will be designed to correct this situation and should result in additional electrical power savings.

Updated operating performance objectives for this program area are summarized below. Programmed capital projects required for their achievement are identified on pages 61 to 69.

FINANCIAL AND OPERATIONAL EFFICIENCY PERFORMANCE OBJECTIVES

FY 1982/83*

1. Maintain a funded budget and a farebox ratio of 40% or more under an appropriate fare structure.
2. Maintain a rail cost per passenger-mile of ____¢ or less.
3. Achieve a level of service output such that the following vehicle-miles are produced per equivalent District employee (based on 2000 hours worked including overtime, excluding capitalized labor):

Operations Departments _____
Administrative & Support Depts _____
Total District _____

4. Improve system utilization (passenger-miles per seat mile) to ____% by June 1983 through continued monitoring of train capacity to match passenger demand patterns.
5. Maintain a paid sick leave rate of no more than 3.5% (9.1 paid days annually per employee).

FY 1983/84 to FY 1986/87

1. Maintain a minimum farebox ratio of 40%.

* Blanks to be filled in based on Adopted Budget data which was not available at time of Publication.

Program Area F: Patronage and Travel Promotion

The realization of BART demand forecasts is greatly dependent upon the District's ability to provide an acceptable quantity and quality of service at a given fare level. Within its almost 10-year operating history, the District has made very substantial improvements in both the areas of service capacity and quality while minimizing the impacts of required fare increases. And, as patronage records reveal, public response has been very favorable with sharp increases in ridership occurring with each major service improvement.

Expected increases for highway congestion and rising costs for automobile travel, will continue to result in even greater demand for BART service. To maintain high quality service under these conditions will require the timely implementation of those essential capital improvements identified thus far under each program area and others as summarized on pages 61 to 69.

Efforts in the area of patronage and travel promotion will subsequently focus on realizing demand forecasts through programmed service improvements and effective marketing strategies. This includes the November 1982 introduction of a joint BART/MUNI pass which is expected to increase transit usage within San Francisco, followed by a joint BART/MUNI/AC pass to be made available at a later date. Additionally, train and station area cleanliness, public contact employee helpfulness and courtesy, and service

announcement accuracy will be continually monitored to assure acceptable performance in these important areas is also being achieved.

Until substantial increases can be provided for peak period capacity in the primary demand direction, promotional efforts will continue to focus on attracting additional off-peak and reverse commute ridership. Strategies will build upon the information base established by the Passenger Profile and Latent Demand Surveys, which are conducted annually on an alternating basis.

Revised operating performance objectives for this program area are as follows:

PATRONAGE AND TRAVEL PROMOTION PERFORMANCE OBJECTIVES

FY 1982/83

1. At a minimum, achieve normal growth projections for average daily patronage as follows (in 1,000's):

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
Avg. Wkdy:	182.4	185.7	180.3	183.3	187.0	193.6	183.5	184.4	185.2	186.0	186.8	191.7
4-Hr. Pk:	92.3	94.5	92.3	95.6	97.5	96.5	97.0	97.6	98.2	98.7	99.2	99.8
Off-Pk:	90.1	91.2	88.0	87.7	89.5	97.1	86.5	86.8	87.0	87.3	87.6	91.9
Saturday:	65.0	74.2	67.8	67.2	73.2	77.1	69.3	71.0	72.7	73.7	74.9	74.9
Sunday:	41.4	44.0	41.6	40.8	42.3	41.3	40.8	41.8	42.4	42.9	43.5	44.0

2. In addition to the above, actively promote off-peak ridership to achieve a 3% increase in travel as follows (in 1,000's):

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
Avg. Wkdy:	2.7	2.7	2.6	2.6	2.7	2.9	2.6	2.6	2.6	2.6	2.6	2.8
Saturday:	2.0	2.2	2.0	2.0	2.2	2.3	2.1	2.1	2.2	2.2	2.2	2.2
Sunday:	1.2	1.3	1.2	1.2	1.3	1.2	1.2	1.2	1.3	1.3	1.3	1.3

3. Continue the sampling procedure to evaluate train and station area cleanliness against an acceptable standard, and monitor performance regularly.
4. Continue the sampling procedure to evaluate public contact employee courtesy and helpfulness against an acceptable standard, and monitor performance regularly.
5. Continue the sampling procedure to evaluate the accuracy of service announcements both in stations and on-board trains against an acceptable standard, and monitor performance regularly.
6. Implement a joint pass permitting single ticket riding of the BART and MUNI systems by July 1, 1982 and extend the pass to AC Transit by June 30, 1983.

FY 1983/84 to FY 1986/87

1. Maintain acceptable quality of service as reflected by accuracy of service announcements, employee helpfulness, and station cleanliness in support of achieving the following patronage levels (1000's):

	June 1984	June 1985	June 1986	June 1987
Average Weekday:	208.3	221.7	235.9	259.7
4-Hr. Peak:	105.1	109.6	114.2	127.5
Off-Peak:	103.2	112.1	121.7	132.2
Saturday:	81.6	88.7	96.3	104.6
Sunday:	48.0	52.1	56.6	61.4

Program Area G: Affirmative Action

Efforts in this program area will continue to concentrate on achieving female and minority employee and MBE participation objectives as stated in the District's Affirmative Action Plan. The current SRTP objectives were developed in accordance with the plan and are as follows:

AFFIRMATIVE ACTION PERFORMANCE OBJECTIVES
<u>FY 1982/83</u> 1. Encourage efforts to attain ____ female and ____ minority representation in the District workforce (subject to revision based on analysis of 1980 census data). 2. Encourage efforts to attain 20% minority and female owned business enterprise participation in District contract activities. <u>FY 1983/84 to FY 1986/87</u> 1. Make every effort to achieve participation rates for female and minority employment and minority business enterprise called for in District Equal Employment and MBE plans.

Program Area H: Extension Service and Capacity

This program area is a long-range planning effort which brings into focus the complex array of issues concerning BART rail extensions. This includes considerations of how extension service may impact both existing and planned basic system facilities. The District will continue to coordinate efforts with local agencies and others having interests within proposed extension corridors.

The District's multi-phased extension plan is summarized on page 58. Performance objectives for this program area are as follows:

EXTENSION SERVICE AND CAPACITY PERFORMANCE OBJECTIVES
<u>FY 1982/83</u> Continue to implement the Extension Right-of-Way and Facilities Expenditures Program
<u>FY 1983/84 to FY 1986/87</u> Continue to implement the Extension Right-of-Way and Facilities Expenditures Program

BART EXTENSION PHASING

PHASE	DESCRIPTION	NO. OF NEW STATIONS	MILES OF DOUBLE TRACK	NO. OF NEW MAINT. YARDS	COST (\$1982M)
I	- Extension of Concord line to SR-4 - Extension of Fremont line to Warm Springs - Extension of Daly City line to Colma	1 2 1	2.6 5.7 1.5	0 0 0	107.1 301.5 106.5
	SUBTOTAL	4	9.8	0	515.1
II	- Extension of Concord line to West Pittsburg - Extension from Bay Fair Station along I-580 to Dublin - Extension of San Mateo line to South San Francisco.	1 2 1	4.3 12.0 2.8	0 0 0	198.1 339.5 259.6
	SUBTOTAL	4	19.1	0	797.2
III	- Extension of Concord line to Antioch - Extension of Dublin Canyon line to downtown Pleasanton - Extension of San Mateo line to the Tanforan Shopping Center	3 1 1	8.5 4.0 1.9	1 0 0	348.2 115.8 186.3
	SUBTOTAL	5	14.4	1	650.3
IV	- Extension of Pleasanton line to Livermore - Extension of San Mateo line into the airport terminal	2 1	8.2 2.1	1 1	250.3 351.8
	SUBTOTAL	3	10.3	2	602.1
	20-YEAR EXTENSION PLAN TOTAL	16	53.6	3	2,564.7

Program Area I: Joint Development

Efforts in the area of joint development will continue to focus on assessing BART's real property assets including air rights and potential marketing and implementation strategies. In addition to investigations currently under way for both El Cerrito Plaza and Pleasant Hill stations, indepth studies will be conducted for other selected station areas. These efforts will include an analysis of: market conditions, urban design parameters, parking options, circulation, economic and social impacts, development costs, income potential, land values, predevelopment costs to BART, and ridership potential.

Other planned activities for this program area will include: EIR/community impact analysis, preparation of developer solicitation packages, development of ongoing market strategies for station area development, consideration of legislative authority, evaluation of development proposals, negotiation of development agreements, and ongoing discussions with local agencies.

The performance objectives for this program area will thus be to:

JOINT DEVELOPMENT PERFORMANCE OBJECTIVES
<u>FY 1982/83</u>
Continue to work with local jurisdictions in developing station specific plans.
<u>FY 1983/84 to FY 1986/87</u>
Continue to work with local jurisdictions in developing station specific plans.

Program Area J: Performance Data Collection and Reporting

The availability of key performance data is an essential element required for effective management and the overall decision-making process. District efforts will continue to focus on enhancing the management information systems as a primary means for improving both the accuracy and timeliness for data reporting. Twelve major applications have already been brought on-line with five others scheduled for completion by July 1983. These latter applications, and their scheduled completion dates include: Automated Police System (September 1982), Project Management System (January 1983), Data Collection System (January 1983), and Performance Monitoring System (July 1983).

This effort has already resulted in major improvements for data reporting. Additional enhancements will assist BART staff even further in the preparation of regularly published key documents used by both management and the Board of Directors to evaluate system performance.

Performance objectives for this program area are summarized below. Capital projects in support of achieving these objectives are identified on pages 61 to 69.

PERFORMANCE DATA COLLECTION AND REPORTING OBJECTIVES

FY 1982/83

1. Transmit monthly Patronage Report to Board of Directors, Department Managers and appropriate agencies by the tenth working day of the following month; transmit the Budget Performance Report to same recipients by the fifteenth working day of the following month; transmit Quarterly Financial Statements and Quarterly Performance Report on System Objectives to same recipients within 25 working days of the close of each quarter; transmit the quarterly Operations Performance Report to appropriate recipients within 45 working days of the end of each quarter; publish the District's Annual Report within 120 working days of the end of the fiscal year.
2. Improve information exchange with other systems by exchanging reports and related data with appropriate transit operators on a regular basis.
3. Work with MTC, APTA and UMTA to improve and streamline standardized reporting procedures.

FY 1983/84 to FY 1986/87

1. Maintain timely reporting and information exchange efforts.

* * *

CAPITAL PROJECT STATUS SUMMARY

(The following tables summarize both the "high priority" and "routine" capital projects programmed for implementation during the current SRTP timeframe. Projects are cross-referenced by program area based on their respective performance objective impacts. Also indicated are the currently scheduled start and completion dates for each project, along with the alpha-numeric project identification.)

ROUTINE PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY				A: BASIC SYSTEM SERVICE	B: RELIABILITY	C: SAFETY & SECURITY	D: SYSTEM ACCESS	E: FINANCIAL EFFICIENCY	F: PATRONAGE PROMOTION	G: AFFIRMATIVE ACTION	H: EXTENSION SERVICE	I: JOINT DEVELOPMENT	J: PERFORMANCE REPORT
PROJECT NUMBER	PROJECT NAME	START DATE	COMP. DATE										
458B	REPLACE IBM BILL VALIDATORS	1STRC	11BC		X								
45CC	MODIFY CUBIC BILL VALIDATORS	1STRD	11BC		X								
*79JD	WYCOM CIRCUIT TESTER - ATC	103-79	11-80		X			X					
68AB	ADDL CASH ROOM EQUIP-GENERAL	1STRC	104-81										
60GF	NEW SECONDARY CONTROL PANEL	1STRC	112-81										
60AB	LGAD STUDIES-CENTRAL TC CMPTR	106-75	112-81			X							
27KA	PABX PHONES - GENERAL	105-81	101-82					X					
79MD	FLATCARS	105-81	101-82		X			X					
*68CB	ADDL BILL/Coin COUNTERS	1STRD	102-82					X					
11LC	EVASE CHAMBER - VENT FAN MODS	1STRD	102-82			X							
*41GF	MANUAL CAB SIGNALING - MCS	1STRD	102-82	X	X								
01XD	TEMP IMPS/CALIPANS LOT-FMS(1)	104-81	103-82				X		X				
79MJ	PORTABLE TRACK EQUIP SEIOFF	1STRC	103-82		X			X					
17FF2	WAREHOUSE&OUTSIDE STORAGE IMPS	1STRD	103-82					X					
*48J	RELOC VNDERS, ADF&CMGRS-ALL STAS	109-81	103-82				X						

HIGH PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY				A: BASIC SYSTEM SERVICE	B: RELIABILITY	C: SAFETY & SECURITY	D: SYSTEM ACCESS	E: FINANCIAL EFFICIENCY	F: PATRONAGE PROMOTION	G: AFFIRMATIVE ACTION	H: EXTENSION SERVICE	I: JOINT DEVELOPMENT	J: PERFORMANCE REPORT
PROJECT NUMBER	PROJECT NAME	START DATE	COMP. DATE										
07CC-130	KE TURNOUTS & RELOCATION	103-81	102-82	X	X								
17BN	OPERATIONS CREW OFFICE (LMA)	1STRD	103-82					X					
91FB	EVALUATE EXISTG WAYSIDE FACILS	101-80	103-82			X							
07CB-120	KE SUBWAY COMPLETION, SIGNALS	103-81	105-82	X	X								
15AW	ADDITIONAL MILEPOST SIGNS	1STRD	105-82		X								
59BD	POWER SUPPLY-FIX WALLER ST FANS	112-80	108-82		X	X							
09DG	TUBE CORROSION CNTRL STDS	102-81	106-82		X	X		X					
07CC	KE AT-GRADE CONST-23RD TO MAS	1STRD	107-82	X	X								
07CC-110	KE AERIAL STRUCTURES	106-81	108-82	X	X								
03FI	REDUNDANT VENT FANS (BHT)	1STRD	109-82		X	X							
20FD	OPTIMIZE SPEED PROFILES	101-81	109-82		X			X					
2271C	FIRE PHONES (BHT)	1STRD	110-82		X	X							
445AF	HART/MUNI INTERIM PASS	1STRD	110-82				X		X				
09DF	TUBE ANODE REPLACEMENT - 1981	102-81	112-82		X	X		X					
03PH	E-PORAL DOORS-ECW IMPVT(S)GHT	111-80	105-83		X	X		X					

HIGH PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY				A: BASIC SYSTEM SERVICE	B: RELIABILITY	C: SAFETY & SECURITY	D: SYSTEM ACCESS	E: FINANCIAL EFFICIENCY	F: PATRONAGE PROMOTION	G: AFFIRMATIVE ACTION	H: EXTENSION SERVICE	I: JOINT DEVELOPMENT	J: PERFORMANCE REPORT
PROJECT NUMBER	PROJECT NAME	START DATE	COMP. DATE										
4111	REPLACE EVAPORATOR BOX COVERS	1STRD	106-83			X							
41J1	UNCOUPLING SWITCH-HOSTLG PANEL	1STRD	106-83			X							
41BB	REPLACE XA-25 PC BOARD	103-79	106-83		X								
15FE	TRACTION POWER GROUND RELAYS	102-81	106-83		X			X					
41BJ	BRAKE RELAY LOGIC - MCD	1STRD	106-83		X								
41DB	GROUND TURPEDG AIR TANKS	1STRD	106-83			X							
07CBCC	KE TRACK (KET)	1STRD	109-83	X	X								
41BG	BRAKE GRID HEAT SHIELDS	1STRD	106-85			X							
*XXXX	RADCOM	107-78	104-84	X		X							
07CO-110	KE TRACK WRK & ELECT. & T.C.	110-81	106-84	X	X								
61--	INTEGRATED CONTROL SYSTEM - ICS	1STRD	101-85	X	X						X		
41EI	VEHICLE FIRE HARDENING	104-79	106-85	X	X								
11R-	DALY CITY TURNBACK	105-78	112-86	X	X				X				

ROUTINE PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY				A: BASIC SYSTEM SERVICE	B: RELIABILITY	C: SAFETY & SECURITY	D: SYSTEM ACCESS	E: FINANCIAL EFFICIENCY	F: PATRONAGE PROMOTION	G: AFFIRMATIVE ACTION	H: EXTENSION SERVICE	I: JOINT DEVELOPMENT	J: PERFORMANCE REPORT
PROJECT NUMBER	PROJECT NAME	START DATE	COMP. DATE										
XXXX	IAC/BART/MUNI PASS CONCEPT DEV	1STRD	1TBD				X		X				
0510	1EL CERKITG PLAZA - INTERIM PRK	1TBD	1TBD				X		X				
111E	1BART/MUNI PLATFM CONKS-CCS(11)	1TBD	1TBD				X		X				
XXXX	1TRAIN ARR SIGNALS AT BUS STOPS	1TBC	1TBD				X		X				
03NC	1SC.PAC.RR RCW PKG LOT - PHS(1)	1TBD	1TBD				X		X				
20HB	1ADD'L STATION ESSENTIAL POWER	106-20	1TBD		X								
44CA	1TICKET ENCODERS	1TBC	1TBD		X			X					
44CO	1PRE-ENCODED TICKET DISPENSERS	103-79	1TBD					X					
44SAC	1EXPAND AFC DAS CAPABILITY	111-80	1TBD					X					X
44SAH	1AC/BART/MUNI SUPER PASS	1STRD	1TBD				X		X				
45DA	1MODIFY 2 EXISTING ENCODERS	1180	1TBD		X			X					
68EB	1REDESIGN TC SVC CUBIC AFC	110-78	1TBD		X								
417ED	1VARIOUS BUILDING MODS - CHB	103-79	1TBD						X				
44AB	1AUTOMATIC TELLERS STUDY	107-80	1TBD						X				
4408.DC	1REPLACE AFC EQUIP. COMPONENTS	1STRD	1TBD		X								

ROUTINE PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY				A: BASIC SYSTEM SERVICE	B: RELIABILITY	C: SAFETY & SECURITY	D: SYSTEM ACCESS	E: FINANCIAL EFFICIENCY	F: PATRONAGE PROMOTION	G: AFFIRMATIVE ACTION	H: EXTENSION SERVICE	I: JOINT DEVELOPMENT	J: PERFORMANCE REPORT
PROJECT NUMBER	PROJECT NAME	START DATE	COMP. DATE										
79HG	SUBWAY VACUUM CLEANER	109-81	106-82		X			X					X
79ME	TRACK GEOMETRIC ANALYSIS CAR	1	106-82		X			X					
15AX	BATTERY ROOM VENTILATION MOODS	1	106-82			X			X		X		
XXXX	EXTENSIONS R.O.W. ACQUISITION	106-81	106-82										
01WD	TRANSFER INFORMATN CENTER(FMS)	1	106-82				X		X				
41EE	A TO B CAR CONVERSIONS	1	106-82	X				X					
468BC	3RD GENERATN CASH HANDLG CMPUTR	1	106-82	X				X					
09DE	RESTORE SF VENT CORROSION PROT	102-81	107-82		X	X		X					
03FC	EARTHQUAKE BEHAVIORAL STUDY	1	107-82			X							
4XXXX	AFC RELIABILITY IMPROVEMENT	13-79	108-82		X								
09HH	HI-WATER ALARMS/LOWERY GALLERY	1	109-82			X			X				
03SD	SACTO.NO.RR ROW PKG LOT-CDS(1)	1	109-82				X						
09HH6	MISC. FIRE & SAFETY MOODS	1	109-82			X							
91FC	EMERG VENTILATION-OAK WYETKMY	1	107-81	109-82			X						

ROUTINE PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY				A: BASIC SYSTEM SERVICE	B: RELIABILITY	C: SAFETY & SECURITY	D: SYSTEM ACCESS	E: FINANCIAL EFFICIENCY	F: PATRONAGE PROMOTION	G: AFFIRMATIVE ACTION	H: EXTENSION SERVICE	I: JOINT DEVELOPMENT	J: PERFORMANCE REPORT
PROJECT NUMBER	PROJECT NAME	START DATE	COMP. DATE										
09EJ	IRPLC UPPER GALLERY MATCH COVERS	12-82	12-82			X							
15MG	EARTHQUAKE SAFETY ELEVATOR MODS	12-82	12-82			X							
110B	ADOL BUS SHELTERS - CCS(IV)	12-82	12-82				X		X				
01XE	BUSWAY PATRGN CANOPY -FMS (II)	12-82	12-82				X		X				
01SS	STGREROOM (CHY)	12-82	12-82					X					
208P	TIMELOCKING MODS	12-82	12-82	X									
17CD	P&W OFCS ANNEX E&M SHOPS-PWS	12-83	12-83					X					
17CD6	OUTSIDE STGR/TRK IMP PWS (OKS)	12-83	12-83					X					
17CF	SPUR TRACK, ROAD, SITE IMP-S-PWS	12-83	12-83		X			X					
03JE	PERM IMPVT/CALTRANS LCT-LAS (I)	12-83	12-83				X		X				
64--	REPLACE MGMT INFO SYS - MIS	12-83	12-83					X					X
09DD	ISF APPROACH STRUCTURES	12-83	12-83		X	X		X	X				
17J-	TECH TRNG CNTR-OHY (TTC)	12-83	12-83		X	X		X					
20ED	PRIMARY TRAIN DETECTION STUDY	12-83	12-83	X	X								
11MB	MIDWAY/KISSRIDE PKG LOT-GPS(1)	12-83	12-83				X		X				

ROUTINE PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY			A: BASIC SYSTEM SERVICE	B: RELIABILITY	C: SAFETY & SECURITY	D: SYSTEM ACCESS	E: FINANCIAL EFFICIENCY	F: PATRONAGE PROMOTION	G: AFFIRMATIVE ACTION	H: EXTENSION SERVICE	I: JOINT DEVELOPMENT	J: PERFORMANCE REPORT
PROJECT NUMBER	PROJECT NAME	START DATE	COMP. DATE									
110F	1 MIDDAY/KISS-RIDE LCT -BPS (11)	106-82	104-83									
110D	1 BUS/KISS-RIDE IMPVIS - BPS (11)	106-81	105-83									
91AC	1 SYSTEM PERFORMANCE STUDY	106-80	105-83	X	X			X				
			106-83									
41BR	1 T2 THYRISTOR TRAY IMPVIS	105-75	106-83	X								
41BC	1 REPLACE BLOWER FILTER	1	106-83	X								
41JC	1 RELOCATE MOTOR/ALT FAULT RELAY	1	106-83	X								
41IH	1 SHOCK MNTG-EVAP HEATR & FRAME	1	106-83		X							
20FE	1 PERMANENT B-POINTS	1	106-83	X								
41GE	1 P-HANDLE	1	106-83	X								
XXXX	1 RAIL REPLACEMENT PH I THRU V	106-81	106-83									
01GF3	1 COMPACT LCT RESTRP-A,C,K,R LINE	1	106-83									
15NC	1 PH II SYSTM ACCESSIBILITY IMPVS	106-82	106-83			X		X				
41BK	1 REPLACE PCB-FILLED CAPACITORS	1	106-83		X			X				
41EC	1 PNEUMATIC WINDSHLD WIPER MOTOR	1	106-83	X								

ROUTINE PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY				A: BASIC SYSTEM SERVICE	B: RELIABILITY	C: SAFETY & SECURITY	D: SYSTEM ACCESS	E: FINANCIAL EFFICIENCY	F: PATRONAGE PROMOTION	G: AFFIRMATIVE ACTION	H: EXTENSION SERVICE	I: JOINT DEVELOPMENT	J: PERFORMANCE REPORT 'G
PROJECT NUMBER	PROJECT NAME	START DATE	COMP. DATE										
41HD	CAR FAULT ANNUNCIATOR	1STRD	106-83	X	X								
411C610	COMPRESSOR CLUTCH	1STRD	106-83	X	X			X					
0100	BUS/RAIL INTERFACE IMPS=HAS(11)	1STRD	107-83				X		X				
03SC	INTERCITY BUS TERMINAL (CDS)	1STRD	107-83				X		X				
03RC	TRANSFER INFORMATN CENTER(CDS)	1STRD	108-83				X		X				
42788	COMMUNICATNS CABLE NETWORK-CCN	1STRD	109-83	X	X								
040A	BUS STATN PARKRIDE LCT-NCS(XR)	106-82	11-83				X		X				
11ED	100-SPACE PARKNG EXPAN-QWS(11)	11-83					X		X				
17H-	REGIONAL ADMINISTRATIVE CTR	1STRD	112-83					X					
XXXX	STOCK ROOM EXPANSION	1	104-84									X	
05MC	INTERCITY BUS TERMINAL - RIS	1STRD	105-84				X		X				
03CEZ	STRENGTHEN OVER-XINGS	1	106-84			X							
42--	NEW VEHICLE ATC-PRODUCTION	1STRD	106-84	X	X								
42--	NEW VEHICLE ATC	107-80	107-84	X	X								
05KG	50-SP.SFRR PARKG EXPAN=CNST(11)	106-83	108-84				X		X				

ROUTINE PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY				A: BASIC SYSTEM SERVICE	B: RELIABILITY	C: SAFETY & SECURITY	D: SYSTEM ACCESS	E: FINANCIAL EFFICIENCY	F: PATRONAGE PROMOTION	G: AFFIRMATIVE ACTION	H: EXTENSION SERVICE	I: JOINT DEVELOPMENT	J: PERFORMANCE REPORT
PROJECT NUMBER	PROJECT NAME	START DATE	COMP. DATE										
41BH	MOTOR REWIND UPGRADE	1STRD	101-85		X				X				
42--	2ND GEN TRANSIT VEHICLES	106-79	107-86	X				X	X				
03NE	1200-SP-WEST LOT EXPANS-PHS(1)	1STRD	107-86										

CHAPTER III

FIVE YEAR FINANCIAL PLAN



Control



Given the foregoing identification of specific BART objectives for the five-year period, it is the purpose of this chapter to summarize the financial projections associated with implementation of the proposed capital and operating plan, to identify problems limiting its implementation, and to recommend feasible solutions in the form of a five-year financial plan. This chapter is comprised of three main sections: operating budget projections, capital budget projections, and combined fiscal strategy. Within each of the first two sections, the discussion focuses first on the underlying assumptions for the projections. Summary financial projections are then shown in tabular form. Problems resulting from the projections are then highlighted, and proposed solutions discussed.

* * *

FIVE-YEAR OPERATING BUDGET PROJECTIONS

BART's five-year operating expense outlook will be influenced by rapidly rising electrical power costs, higher express bus expense and new labor contracts governing all represented employees. Operating revenues, bolstered by anticipated patronage increases, should continue to expand. Financial assistance will consist mainly of the BART share of the 1/2% sales tax and property tax funds for operations. Receipt of discretionary financial assistance will depend heavily on MTC's evaluation of claims by AC Transit and SF MUNI. The fundamental concern of the ensuing discussion of District operating budget projections is whether anticipated operating sources will be sufficient to fund all necessary District operating requirements.

The operating budget projections summarized below are consistent with the tentative FY 1982/83 BART budget. For more detailed budgetary information, readers of this document should review the FY 1982/83 Tentative Operating Budget. The financial projections and discussion below complement, but are not a substitute for the budget. In the paragraphs immediately following, the main factors influencing operating expense will be reviewed. This will be followed by a similar review of operating revenues and financial assistance. The principal components of operating expense include net labor expense (excluding capitalized cost), express bus, power and other nonlabor expense.

Net Labor Expense and Additional Staffing Requirements

The net labor cost figure in the projections shown on page 71 is consistent with the estimated cost of the recently negotiated labor contract. Beyond FY 1984/85, the net labor expense estimates assume another round of contract renegotiations and increases comparable to those in the first three years of the planning period.

The net labor cost projections for FY 1982/83 include an increase in staff over that reflected in the FY 1981/82 budget. The detailed justification of these additional positions is covered in the FY 1982/83 Tentative Budget back-up material. However, these additions are for the following general areas:

- o Additional cash collection and cash handling. Higher volumes of ridership at higher fare levels will require more cash handling and related security personnel.
- o Additional maintenance. With an increase in annual vehicle miles of service, rolling stock maintenance requirements increase accordingly. The workload in other maintenance activities is also expected to require additional personnel.

PRELIMINARY ESTIMATE ^a
FIVE YEAR OPERATING STATEMENT
OPERATING EXPENSE, REVENUES AT CURRENT FARES,
& ANTICIPATED FINANCIAL ASSISTANCE
(\$ Millions)

	Adopted Budget FY 81/82	Estimated Actual FY 81/82	Projected			
			FY 82/83	FY 83/84	FY 84/85	FY 85/86
REVENUES						
Net Rail Revenue:	\$ 45.7	\$50.5	\$50.5	\$50.5	\$50.5	\$50.5
81/82 Level	-	-	4.8	8.0	13.8	16.9
Expected Increase due to Patronage Growth	-	-	-	-	-	4.0
Response to Service Expansion	-	-	-	-	-	-
Express Bus Revenue	1.1	1.0	1.1	1.1	1.2	1.3
Net Passenger Revenue	46.8	51.5	56.4	59.6	62.5	72.7
Other Operating Revenue	5.0	6.1	3.9	3.9	4.0	4.2
Net Operating Revenue	51.8	57.6	60.3	63.5	66.5	76.9
EXPENSES						
Net Labor, Current Service	81.0	78.6	90.1	95.2	101.4	116.1
Additional Service Staffing	-	-	-	-	-	3.4
Total Net Labor	81.0	78.6	90.1	95.2	101.4	119.5
Express Bus and Shuttle Service	5.3 ^b	6.4 ^b	7.8	8.6	9.4	11.4
Power	18.7	16.6	18.2	21.4	25.2	30.1
Additional Service Power Cost	-	-	-	-	-	3.2
Other Non-Labor	15.4	15.7	17.2	19.0	20.9	25.3
Additional Service Other Non-Labor Cost	-	-	-	-	-	0.5
Total Operating Expense	120.4	117.3	133.3	144.2	156.9	198.0
OPERATING DEFICIT	(68.6)	(59.7)	(73.0)	(80.7)	(90.4)	(121.1)
FINANCIAL ASSISTANCE						
Property Tax	3.0	4.4	4.4	4.8	5.2	6.1
Sales Tax (75%)	62.7	60.4	66.1	72.7	80.0	96.8
TDA State Assistance	5.3	2.5	3.0	3.3	3.6	4.4
Total Financial Assistance	71.0	67.3	73.5	80.8	88.8	107.3
NET OPERATING RESULT	2.4	7.6	0.5	0.1	(1.6)	(13.8)
CAPITAL ALLOCATIONS						
Improvement Allowance	2.6	2.6	2.7	2.7	2.8	3.0
NET FINANCIAL RESULT	(0.2)	5.0	(2.2)	(2.6)	(4.4)	(16.8)

^a Before necessary adjustments; for final financial plan, see page 94

^b Not including shuttle service.

- o Additional operations staff. A number of additional positions are needed in Field Services.
- o Administrative support staff. The additional positions are needed to provide increased administrative support, including work on capital projects.

The net increase in budgeted headcount for permanent positions by year-end amounts to 29 positions, partially funded through capital sources. In subsequent years, the cost of additional staffing required for service expansion, such as additional train operators and vehicle maintenance personnel required for increased train operations, is itemized separately.

Express Bus and Shuttle Expense

The \$7.8 million total shown for express bus services in FY 1982/83 reflects partial implementation of the Express Bus Five-Year Plan. The level of expense represents a combination of express services, carryover local service not yet assumed by local operators, and existing shuttle operations. Future expense levels include a 10% annual increase.

Continuation of the local service component is estimated to cost \$0.7 million more than would be necessary to fund the adopted express bus plan. A corridor by corridor examination shows that the extra expenditure is required for "D" route service, primarily between Walnut Creek and Martinez.

Electrical Power Expense

Electrical power cost constitutes an increasing share of total operating expense because power rates have risen faster than both the general price level and other BART expenses. Recent heavy rains have raised the water level in PG&E hydro-electric reservoirs well above normal, enabling the utility to implement a temporary energy cost rate reduction. Accordingly, the BART electrical power cost budget requirement for FY 1982/83 is \$18.2 million, about the same as the FY 1981/82 power budget. This stabilization of energy costs appears to be a temporary phenomenon. The longer-run outlook is for further energy cost increases.

Efficient electrical energy use is of paramount budgetary significance. As indicated earlier, BART train sizing is closely geared to District load factor objectives, so as to minimize unnecessary car-miles. In view of the recent and future projected trend in power rates, consideration of future increases in load factor guidelines may be warranted.

Beyond the FY 1982/83 power cost estimate, power cost projections for the remaining four years appear in the District five-year operating budget summary on page 71. The basis for these estimates is a survey of the latest available information on future electrical power cost increases which was conducted for BART by Resources Management International, Inc. (RMI). The RMI study concluded that BART should expect annual power cost increases of 15% - 20% for the remainder of this planning period. Accordingly, future projections reflect a 17.5% annual increase in total power rates. Additionally, the fourth and fifth year projections include the impact of two increases via the energy

cost adjustment clause (ECAC) beyond the 17.5% annual cost increases. Since ECAC adjustments comprise about 70% of the total power bill, the projected 5% and 10% adjustments add 3.5% and 7% respectively to the last two years' anticipated increases. The power cost of subsequent service expansions is itemized separately.

Other nonlabor expenses are projected to increase at 10% per year. The vehicle maintenance nonlabor cost of service expansions is also shown separately.

Total net operating expense for FY 1982/83 reflects an increase over the FY 1981/82 budget level of 10.7%. The main factors causing this first year increase are expanded express bus service, a full year of increased power cost (versus the low first half FY 81/82 rates), additional staffing, and continued inflation in both labor and nonlabor costs. Increases of 8.2%, 8.8% and 10.9% are indicated for the next three years. Service expansion in FY 1986/87 is expected to contribute to overall expense increase of 13.8% in the last year.

Operating Revenue

Operating revenue is comprised chiefly of rail fare revenue, express bus fare revenue, and other operating revenue (mainly interest earnings on operating funds). The operating statement indicates the expected FY 1981/82 level of net rail fare revenue and increases over this level due to patronage growth. Rail fare revenue is expected to grow by approximately 9.5% during FY 1982/83 and by another 6% during FY 1983/84.

Thereafter, growth is assumed at the long-run average rate of 5.6%, except where capacity constraints are expected to limit additional increases prior to mid-1986 on the Concord and Fremont/Daly City routes. Further additions to patronage in excess of the long-term growth rate are anticipated in response to significant peak period service expansion planned for FY 1986/87. Express bus fare revenues are expected to be generally constant throughout the period.

Other operating revenue will continue to come primarily from interest earnings on operating funds. This source is expected to diminish from current levels, assuming interest rates drop to a 9% - 10% range from today's higher levels. Only minor growth is assumed for advertising and concession revenues, and the other lesser components of this source.

Total operating revenues are expected to increase 16.4% over the budgeted level between FY 1981/82 and FY 1982/83, with an average of 5.0% annually for the next two years. The first year increase reflects continued higher than forecast patronage growth more than offsetting the anticipated decline in other operating revenues. Because of the expected response to planned service expansion in FY 1986/87, revenue growth of 10.5% is projected for the last year of the planning period.

Financial Assistance

BART sales tax and "BART only" TDA revenues are projected to increase by 10% annually throughout the period, and property tax funds for operations are expected to grow by approximately 8% per year. This results in an average growth of nondiscretionary financial assistance of 9.9% annually over the five-year period.

The combination of operating revenue and financial assistance together are not expected to keep pace with projected operating expense. In percentage terms, sources are estimated to grow by 9.0% from FY 1981/82 to FY 1982/83 while operating expense is growing by 10.7% over budget. In the remaining four years, operating sources are projected to increase 8.3% annually, on the average. During the same period, operating expense growth averaging 10.4% annually is anticipated.

Capital Allocations

The above discussion focuses on only part of the District's financial requirements for operations. At a minimum, BART must plan on continuing to fund its Improvement Allowance from operating sources. This is consistent with past practices and the understanding reached among the other regional operators and MTC in the AB 842 financial planning process. For the period, this requirement ranges from \$2.7 to 3.0 million annually.

Clearly, the financial picture resulting from the given mix of assumptions is untenable. Annual unfunded deficits of \$2.2 to \$16.8 million are forecast. The remainder of this section focuses on the problems inherent in this set of projections and identifies some solutions that will improve BART's operating budget outlook.

Resolution of Projected Unfunded Deficits

Since projected expenses over the five years exceed estimates of available resources, either requirements will have to be scaled down to a more realistic level, additional sources generated, or some combination of the two strategies utilized. A deficit in any period is not infeasible, provided an offsetting surplus can be carried forward. Over time, however, sources must equal uses. This section will attempt to suggest some workable guidelines for budget balancing given the specific projections of BART operating resources and requirements.

How much can BART control the growth rates of its financial inputs? Looking first to the sources side, more than half of BART's operating revenues are simply fixed percentages of the three-county sales and property tax bases. Barring major new legislative initiatives, expansion of these sources cannot be affected by BART.

Passenger revenues, however, can be influenced by BART in two ways. The level at which fares are set, results from District policy action and is thus within BART control. To a lesser degree, the actual level of patronage can also be influenced by District policy and actions. Peak period capacity increases are almost sure to generate immediate additional ridership, and the major thrust of the District's capital program is designed to serve this extra demand.

Off-peak ridership gains are even more desirable because considerable under-utilized capacity exists, and the marginal cost of carrying an extra rider is well below the associated marginal revenue. A variety of means could be used to increase off-peak ridership and, as indicated by the most recent BART Latent Demand Survey, the potential market does exist. What is needed is a well conceived off-peak marketing plan, and a District commitment to invest the amount necessary to bring about substantial off-peak patronage and revenue increases.

With respect to fare adjustments, patron response to past fare increases has been very limited, with very little erosion of ridership. However, fare increases must be used carefully, and probably must bear some relationship to relative increases in the cost of alternative transportation or to changes in the general level of consumer prices. Other operating revenues are basically determined by forces outside BART's control.

Availability of discretionary financial assistance depends on the total funding available and the financial condition of other claimants. Given the declining role of federal support for transit operations, additional pressure on other sources of operating assistance is inevitable.

Over 60% of District operating expense is for wages and fringe benefits paid to its employees. Within the limits of the collective bargaining process, wage rates and fringe coverage can be influenced by District policy makers. Staffing levels are directly under BART control, with some limitations. The new contract for the period starting July 1, 1982, will provide the primary determinant of labor costs in the near term.

Nonlabor expense is a function of both unit cost and amount consumed. BART has virtually no influence on the former, but can control nonlabor cost to the degree that the volume of selected inputs can be curtailed.

In summary, BART can adjust fare levels and thereby exercise direct control over somewhat less than half its resource base. Nearly all operating expenses are subject to some limitation to the extent that input volume can be restricted. Whatever potential exists for unit price determination applies only to direct labor inputs. These considerations suggest a multifaceted solution to the unfunded deficit problem. A fare increase, keyed to the change in consumer prices since June 1980, might be utilized to resolve part of the deficit.

On the expenditure side, since BART has more control over input volume utilized than over unit cost, certain steps are necessary. Express bus service is the fastest growing component of BART operating expense. A significant amount of the total operation is in the form of local service which transports patrons who do not ride BART trains. Whether BART can continue to provide this service without offsetting funding should be carefully reconsidered.

Electrical power is another growing component of BART operating expense. Energy usage can be curtailed by running fewer car-miles. This will result from modification of current District load factor objectives. As was indicated on page 37, load factors will probably exceed current standards during peak periods before the new revenue vehicles augment the existing fleet. Similar increases in off-peak load factors should be implemented by design. Current monitoring capability assures the proper allocation of capacity on the average in terms of selected standards.

The adjustments to expense projections just proposed are summarized on page 76. Deficits indicated on page 71 are the starting point for this analysis. Each of the adjustments is itemized and a new bottom line figure is shown.

PROPOSED ADJUSTMENTS TO
REDUCE ANTICIPATED DEFICIT
(\$ Millions)

	<u>FY 82/83</u>	<u>FY 83/84</u>	<u>FY 84/85</u>	<u>FY 85/86</u>	<u>FY 86/87</u>
Net Financial Result Before Adjustments: Surplus (Deficit)	\$(2.2)	\$(2.6)	\$(4.4)	\$(9.7)	\$(16.8)
<u>Adjustments:</u>					
o Off-peak Marketing: Fare Impact		1.3	2.0	2.7	3.6
o Off-peak Marketing: Cost Impact		(0.8)	(0.9)	(1.0)	(1.1)
o Elimination of Local Express Bus Service (or Offsetting Subsidy)	0.7	1.3	1.3	1.5	1.6
<u>Subtotal Adjustments</u>	0.7	1.8	2.4	3.2	4.1
Net Financial Result After Adjustments: Surplus (Deficit)	\$(1.5)	\$(0.8)	\$(2.0)	\$(6.5)	\$(12.7)

The first two adjustment items reflect preliminary estimates of anticipated incremental revenue and cost associated with a significant BART off-peak marketing program, commencing in FY 1983/84. This program would be developed, including necessary market research, strategy and testing, during FY 1982/83. Currently the off-peak/peak 4-hour period split hovers around 50/50. A realistic long-term objective to be supported by the intensified off-peak marketing effort would be to move this split toward 55/45. If this shift seems marginal, it should be recognized that significant expansion of peak riding is expected by the end of the planning period.

The third adjustment proposed deals with reductions in express bus service expense. As noted on page 72, continuation of the local component of express bus service is estimated to cost \$0.7 million more than would be necessary to fund the adopted express bus plan. It is recommended that the \$0.7 million should be paid from Central Contra Costa Transit Authority TDA funds. If this is not done, the service could be discontinued and responsibility shifted to the local operator.

If the \$0.7 million for local service is not available, the express bus budget would be reduced to \$7.1 million. Funding at this level will provide for continuation of current services, except the "D" north of Walnut Creek, plus hourly service on the "P" route to Brentwood. Planned express bus additions which would be deferred are the commute runs from Danville (DN) and San Ramon (US). These additions have received some local opposition which will necessitate further review of the proposals.

The proposed adjustments eliminate 53% of the deficit indicated in the first three years, but the problem worsens in the fourth and fifth years. The magnitude of the remaining deficits suggests another round of fare increases in the fourth year. This tentative solution is not inconsistent with past assumptions about the interval between fare increases. If BART fares are increased this year, it will be the third increase in approximately 10 years, or about 3-1/3 years per increase.

The District operating statement shown on page 71 has been revised to reflect the adjustments just proposed. This revised statement appears on page 78.

To meet the extra demand forecast for the future, BART has developed a capital program aimed at increasing capacity and service, especially during the peak periods. The next section describes the capital funding required for realizing the program.

* * *

PRELIMINARY ESTIMATES^a
REVISED FIVE YEAR OPERATING STATEMENT
PROJECTED OPERATING EXPENSE, REVENUES AT CURRENT FARES,
& ANTICIPATED FINANCIAL ASSISTANCE
(\$ Millions)

	Adopted Budget FY 81/82	Estimated Actual FY 81/82	Projected			
			FY 82/83	FY 83/84	FY 84/85	FY 85/86
REVENUES						
Net Rail Revenue:						
81/82 Level	\$ 45.7	\$50.5	\$50.5	\$50.5	\$50.5	\$50.5
Expected Increase due to Patronage Growth	-	-	4.8	8.0	10.9	13.8
Response to Service Expansion	-	-	-	-	-	-
From Additional Off-Peak Promotion	-	-	-	1.3	2.0	2.7
Express Bus Revenue, without Local Service	1.1	1.0	1.1	1.1	1.1	1.4
Net Passenger Revenue	46.8	51.5	56.4	60.9	64.6	68.4
Other Operating Revenue	5.0	6.1	3.9	4.0	4.0	4.1
Net Operating Revenue	51.8	57.6	60.3	64.8	68.6	72.5
						80.7
EXPENSES						
Net Labor, Current Service	81.0	78.6	90.1	95.2	101.4	110.1
Additional Service Staffing	-	-	-	-	-	-
Total Net Labor	81.0	78.6	90.1	95.2	101.4	110.1
Express bus & Shuttle, Excluding Local Service	5.3 ^b	6.4 ^b	7.1	7.3	8.1	8.9
Power, 2.0% reduction	18.7	16.6	18.2	21.4	25.2	30.5
Additional Service Power Cost	-	-	-	-	-	-
Other Non-Labor, Including Extra Marketing	15.4	15.7	17.2	19.8	21.8	24.0
Additional Service Other Non-Labor Cost	-	-	-	-	-	-
Total Operating Expense	120.4	117.3	132.6	143.7	156.5	173.5
						197.5
OPERATING DEFICIT						
	(68.6)	(59.7)	(72.3)	(78.9)	(87.9)	(101.0)
						(116.8)
FINANCIAL ASSISTANCE						
Property Tax	3.0	4.4	4.4	4.8	5.2	5.6
Sales Tax (75%)	62.7	60.4	66.1	72.7	80.0	88.0
TDA State Assistance	5.3	2.5	3.0	3.3	4.0	4.4
Total Financial Assistance	71.0	67.3	73.5	80.8	88.8	97.6
						107.3
NET OPERATING RESULT						
	2.4	7.6	1.2	1.9	0.9	(3.4)
						(9.5)
CAPITAL ALLOCATIONS						
Improvement Allowance	2.6	2.6	2.7	2.7	2.8	2.9
						3.0
NET FINANCIAL RESULT						
	\$ (0.2)	\$ 5.0	\$ (1.5)	\$ (0.8)	\$ (1.9)	\$ (6.3)
						\$(12.5)

^abefore adjustments for capital project funding; for final financial plan, see page 94.
^bincludes local service, and excludes shuttle service.

CAPITAL BUDGET PROJECTIONS

BART's capital program is developed in accordance with the goals and objectives set by the Board of Directors. Capital projects to achieve the goals and objectives are initiated at departmental levels, then reviewed by BART's Project Review Board and approved by the General Manager for inclusion in the program. Once approved, the implementing departments participate in developing detailed implementation requirements (e.g., costs, cash flows and schedules). Each fiscal year, the Board of Directors adopts the capital budget limit, subject to the Board's specific contracting authorizations and delegation as the year progresses.

BART's five-year funded and unfunded capital program is budgeted at a total of \$1119.2 million. The funded program includes \$118.3 million of which \$46 million is expected to be expended by the end of FY 1981-82. The unfunded program is budgeted at a total of \$1,046.9 million (program year estimates). Detailed lists of funded and unfunded capital projects are included in Appendix D.

BART FIVE-YEAR CAPITAL PROGRAM BUDGET SUMMARY	
Funded Projects	\$ 118.3 million
Estimated Expenditure through June 1982	-46.0
Total Five-Year Plan Funded Projects	72.3
Unfunded Projects through June 1987	1,046.9
Total Five-Year Plan Capital Budget	\$1,119.2 million

The emphasis of the five-year capital program is on the unfunded portion, since providing for the implementation of these unfunded projects is of the utmost importance for the achievement of the District's goals and objectives.

The unfunded capital program was conceived under the most ideal funding circumstances possible. In reality, funding allocations from governmental bodies have rarely reflected these conditions, nor have they been as expeditious as desired.

In recognition of these less than ideal conditions, the ensuing analysis will lead to an unfunded financial program which is more realistic in funding expectations, and is outlined below:

BART FIVE-YEAR UNFUNDED CAPITAL PROGRAM SUMMARY (\$ Million)	
o Unfunded projects with likely funding from traditional sources:	
- Vehicle Fire Hardening	6.4
- 2nd Generation Transit Vehicles	136.9
- 2nd Generation ATO's	43.4
- Daly City Turnback - Phase I	35.0
- Integrated Control System	7.9
- Wayside ATC	20.0
- Cathodic Protection System-Transbay Tube	1.8
- Other Smaller Unfunded Projects	13.6
- Daly City Turnback - Phase II (Design)	2.3
- N. Concord/Martinez Extension (Design)	10.8
- Warm Springs Extension (Design)	21.3
	\$299.4
o Unfunded Projects that could be delayed:	
- N. Concord/Martinez Extension (Construction)	\$137.8
- Warm Springs Extension (Construction)	360.0
- Phase II of Daly City Turnback Project	106.9
- Aerial Barriers	10.7
	\$615.4
o Projects with Alternative Funding Sources:	
- 60 Additional Transit Vehicles w/ATC	\$ 90.6
- Parking Expansion Projects	32.6
- Extension Right-of-Way Acquisition	8.9
	\$132.1
TOTAL	\$1046.9

Assumptions and Methodology for Developing Budget Estimates

Several key assumptions were involved in estimating costs, cash flows, and related schedule information. Costs were estimated based upon an assumed 10% inflation rate in most cases. Projects requiring lengthy implementation periods received more detailed inflation rate analysis with the rate applied to both labor and procurements.

Schedules were based upon the respective departments' estimates. Where possible, these schedules included enough detail to identify procurement dates, notice to proceed dates, etc. Based on this information, cash flow estimates were developed then reviewed by responsible project engineers in order to arrive at final schedules. Projects under \$25,000 in cost were not included.

Additional attention was given to the larger projects so that the resulting estimated drawdowns would be as accurate as possible. Projects for which no schedules were available are shown in the "Within 5 Years" column of the tables which follow. Unfunded projects were handled in a similar manner. Project costs were escalated based on detailed cash flow information in all cases.

Cash flows for each project were then ratioed to reflect the proportion of each project funding source. For example, if a project was funded with 80% UMTA and 20% allocated funds, the individual proportions were calculated for each year on this basis. Individual cash flows for both funded and unfunded projects are summarized by source and are shown on pages 82 and 83. Cash Flows in the summary table are lower than the programmed amounts due to additional cash flow years beyond the 5-year program time frame which are not included.

Finally, it was assumed that some commitment from UMTA to allow for phased funding of new transit vehicles would be obtained. This assumption was made in recognition of the need to award the contract early in FY 1982/83 to ensure the timely implementation of this important project.

Commitment Projections

In general, BART cannot award a project contract without a commitment from the allocating agency. In the case of UMTA funds, for example, contracts awarded by BART to implement a project prior to the UMTA funding date are ineligible for reimbursement. The table on page 84 shows the projected commitment requirements by source for all unfunded projects in the program (see Appendix D for additional detail). The grand total of \$1046.9 million for the five-year period is shown at the bottom of the table on page 84. It can be seen that in the coming five years some \$360 million will be sought from the federal government, and \$574 million from State sources, with the remaining portion of the approximately \$1 billion program to come from MTC and BART sources. These commitments will be required to award contracts in a timely manner to keep the plan on schedule.

Projected Capital Assistance

Timely implementation of the District's capital program will depend heavily on funding availability. Federal "Rail Modernization" funding is estimated to continue at approximately the present level, with increases not likely given the current administration's budget philosophy. Additionally, State funding sources are in doubt due to budget difficulties at that level. Estimated capital funding availability for BART over the next five years is as follows (continued on page 85):

UNTA FIVE YEAR FUNDED CASH FLOW BY SOURCE (\$'1000)

FISCAL YEAR	92/93	93/94	94/95	95/96	96/97	WITHIN 5 YEARS	5 YEAR TOTAL
CASH REQUIREMENTS *	36155	20249	6010	565	0	1350	72379
<u>UNTA FUNDS</u>							
UNTA SECTION 3 (UNTA3)	19814	11885	3428	210	0	409	35746
UNTA SECTION 6 (UNTA6)	257	104	0	0	0	0	361
UNTA SECTION 9 (UNTA9)	214	87	0	0	0	0	301
<u>EHRA FUNDS</u>							
FEDERAL AID URBAN (FAU)	227	0	0	0	0	0	227
<u>STATE FUNDS</u>							
SB-620 FIXED GUIDEWAY (FIXGW)	463	1006	1006	94	0	0	2574
ART. XIX GUIDEWAY (PSG)	1493	414	92	0	0	0	1969
ART. XIX INTERMODAL (PSI)	300	0	0	0	0	0	306
SB-1730	189	730	0	0	0	0	919
<u>AIC FUNDS</u>							
ATC	3370	2021	189	2	0	0	5642
BRIDGE TOLLS (TULLB)	1870	2065	1559	142	0	0	5636
STA 111 (25X) (STA25)	160	72	0	0	0	0	232
STA 11 (75X) (STA75)	521	1690	0	0	0	84	2295
<u>BART FUNDS</u>							
GENERAL CONSTRUCTION (OPERO)	6222	3731	0	0	0	2	9955
BASIC SYS. COMPLETION (OPLRU)	1	0	0	0	0	0	0
SYS. IMPROVEMENT RESERVE (OPERS)	115	30	0	0	0	3	148
VEH. REPLACEMENT RESERVE (OPERV)	171	629	0	0	0	0	800
VEH. FIRE HARDENING RES. (OPENF)	65	1242	1242	117	0	0	2670
SOURCE NOT IDENTIFIED (UNKNU)	718	593	494	0	0	787	2592

* BALANCE OF CASH FLOW TOTALS NOT SHOWN BY SOURCE ARE FUNDED FROM IMPROVEMENT ALLOWANCE AND OPERATING FUNDS.

PART FIVE-YEAR UNFUNDED CASH FLOW BY SOURCE (\$X1000)

FISCAL YEAR	82/83	83/84	84/85	85/86	86/87	WITHIN 5 YEARS	5 YEAR TOTAL
CASH REQUIREMENTS *	41878	62635	47180	171645	322317	4460	650115
UNIA FUNDS							
UNIA SECTION J (UNTA3)	5048	24843	21029	11210	157694	0	300624
UNIA SECTION 9 (UNTA9)	0	317	0	0	0	0	317
FWA FUNDS							
FEDERAL AID URBAN (FAU)	75	581	0	0	0	0	656
FEDERAL AID INTERSTATE (FAI)	1012	3036	8556	1036	0	0	15040
STATE FUNDS							
SB-620 FIXED GUIDEWAY (FIXGW)	17521	16539	6189	47894	119201	3262	212606
SB-620 INTERMODAL (IMFAC)	86	264	264	264	0	0	860
ART. XIX GUIDEWAY (PSG)	3814	7569	4521	6025	4300	0	26849
ART. XIX INTERMODAL (PSI)	50	0	0	0	0	250	300
AIC FUNDS							
ATC							
STA II (75%) (STA75)	12379	2150	2702	10420	33354	0	61005
BARID FUNDS							
GENERAL CONSTRUCTION (UPERG)	0	100	0	0	0	0	100
SYS. IMPROVEMENT RESERVE (UPERS)	1591	2862	2124	2149	7168	0	15894
VEH. REPLACEMENT RESERVE (UPERV)	0	2277	609	680	0	0	3626
REV. VEH. PURCHASE RES. (UPERR)	0	0	0	5267	0	0	9967
SOURCE NOT IDENTIFIED (UNKNQ)	150	17	326	0	0	948	1441

* BALANCE OF CASH FLOW TOTALS NOT SHOWN BY SOURCE ARE FUNDED FROM IMPROVEMENT ALLOWANCE AND OPERATING FUNDS.

BART FIVE-YEAR UNFUNDED CAPITAL PROGRAM (\$ Millions)

	<u>82/83</u>	<u>83/84</u>	<u>84/85</u>	<u>85/86</u>	<u>86/87</u>	<u>WITHIN 5 YRS</u>	<u>TOTAL</u>
<u>UMTA FUNDS</u>							
UMTA Sec. 3	24.8	116.5	5.0	123.9	73.2	0.0	343.4
UMTA Sec. 9	0.0	0.3	0.0	0.0	0.0	0.0	0.3
<u>FHWA FUNDS</u>							
FAU	0.7	0.0	0.0	0.0	0.0	0.0	0.7
FAI	10.1	0.0	5.5	0.0	0.0	0.0	15.6
Subtotal Federal:						360.0	
<u>State FUNDS</u>							
SB-620 (Guideway)	52.6	16.4	472.9	0.0	0.0	3.3	545.2
SB-620 (Intermodal)	0.9	0.0	0.0	0.0	0.0	0.0	0.9
ART XIX (Guideway)	21.7	6.5	0.0	0.0	0.0	0.0	28.2
ART XIX (Intermodal)	0.1	0.0	0.0	0.0	0.0	0.3	0.4
Subtotal State:						574.7	
<u>MTC FUND</u>							
MTC	15.8	6.6	26.8	13.3	18.3	0.0	80.8
STA (75%)	0.2	0.1	0.0	0.0	0.0	0.0	0.3
Subtotal MTC:						81.1	
SOURCE NOT IDENTIFIED	0.2	0.2	0.1	0.0	0.0	1.0	1.5
Subtotal Source Not Identified:						1.5	
<u>BART FUNDS</u>							
General Const	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Basic System Compl.	0.0	0.0	0.0	0.0	0.0	0.0	0.0
System Imp. Res.	2.5	6.4	0.0	7.1	0.0	0.0	16.0
Vehicle Repl. Res.	2.9	0.0	0.0	0.6	0.0	0.0	3.5
Rev. Veh. Pur. Res.	0.0	0.0	0.0	10.0	0.0	0.0	10.0
Subtotal BART:						29.6	
Grand Total	132.5	153.1	510.3	154.9	91.5	4.6	1046.9

ESTIMATED BART GRANT FUNDS (\$ MILLIONS)

<u>FUND SOURCE</u>	<u>82/83</u>	<u>83/84</u>	<u>84/85</u>	<u>85/86</u>	<u>86/87</u>	<u>Total</u>
UMTA (Section 3)	25.0	25.0	25.0	25.0	25.0	125.0
Article XIX (CTC Allocated)	3.1	5.7	5.7	5.7	5.7	25.9
TP&D (CTC Allocated)	6.4	6.0	6.0	6.0	6.0	30.4
MTC Allocated	<u>6.0</u>	<u>4.0</u>	<u>4.0</u>	<u>4.0</u>	<u>4.0</u>	<u>22.0</u>
Total	40.5	40.7	40.7	40.7	40.7	203.3

During the past several years, BART has had to compete with MUNI and CalTrans (Southern Pacific commute operation) for Region IX Rail Modernization funds. Generally, the region's allocation has been split between these operators. BART's share of these funds for the past two fiscal years has been \$16.6 million for FY 1979/80 and \$19.0 million for FY 1980/81. The District expects to receive more than these amounts for the next five years as noted in the first line of the table above. The next line in the table (Article XIX) shows BART's FY 1982/83 allocation of funds based on the California Transportation Commission (CTC) Fund Estimate and Priority List adopted November 20, 1981. Allocations for the remaining four years reflect the amount received by BART in FY 1981/82 from this source. The FY 1982/83 estimate for TP&D funds (the third line in the table) is based on the same CTC planning documents as the Article XIX estimate. Funding for subsequent years is estimated based on BART maintaining its present share from this source. The next funding source in the table is an estimate of funds from MTC sources. It includes some \$2 million from STA funds for BART local match in FY 1982/83 and \$4 million during each remaining year.

Problems

The table on page 86 shows BART's projected needs from these sources by year versus the projected available funding. It can be seen from the table that even without federal cuts, this program will be difficult to fund.

In particular, there will be shortfalls in federal capital funds in FY 1983/84 primarily attributed to the second phase of the Daly City Turnback, and a further shortage in FY 1985/86 when production of the new transit vehicles will be required. FY 1986/87 will also be a year with less severe shortfalls of UMTA funds, again primarily due to the transit vehicle purchases.

CAPITAL PROGRAM COMMITMENTS BASIS
FUNDING REQUIREMENTS VS. ESTIMATED FUNDING AVAILABILITY
(\$ Millions)

FUND SOURCE	82/ 83	83/ 84	84/ 85	85/ 86	86/ 87	WithIn 5 Yrs	Total
UMTA (Section 3)							
Available	25.0	25.0	25.0	25.0	25.0	0.0	125.0
Required	24.8	116.5	5.0	123.9	73.2	0.0	343.4
Difference	0.2	(91.5)	20.0	(98.9)	(48.2)	0.0	(218.4)
Article XIX							
Available	3.1	5.7	5.7	5.7	5.7	0.0	25.9
Required	21.8	6.5	0.0	0.0	0.0	0.3	28.6
Difference	(18.7)	(.8)	5.7	5.7	5.7	(0.3)	(2.7)
TP&D							
Available	6.4	6.0	6.0	6.0	6.0	0.0	30.4
Required	53.5	16.4	472.9	0.0	0.0	3.3	546.1
Difference	(47.1)	(10.4)	(466.9)	6.0	6.0	(3.3)	(515.7)
MTC Allocated							
Available	6.0	4.0	4.0	4.0	4.0	0.0	22.0
Required	16.0	6.7	26.8	13.3	18.3	0.0	(81.1)
Difference	(10.0)	(2.7)	(22.8)	(9.3)	(14.3)	0.0	(59.1)
Other Sources ¹							
Available	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Required	11.0	0.5	5.6	0.0	0.0	1.0	18.1
Difference	(11.0)	(0.5)	(5.6)	0.0	0.0	1.0	(18.1)
Subtotal Non-BART Funds							
Available	40.5	40.7	40.7	40.7	40.7	0.0	203.3
Required	127.1	146.6	510.3	137.2	91.5	4.6	1017.3
Difference	(86.6)	(105.9)	(469.6)	(96.5)	(50.8)	(4.6)	(814.0)
Programmed BART Reserves							
Available	5.4	6.5	0.0	17.7	0.0	0.0	29.6
Required	5.4	6.5	0.0	17.7	0.0	0.0	29.6
Difference	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Total ²							
Available	45.9	47.2	40.7	58.4	40.7	0.0	232.9
Required	132.5	153.1	510.3	154.9	91.5	4.6	1046.9
Difference	(86.6)	(105.9)	(469.6)	(96.5)	(50.8)	(4.6)	(814.0)

Notes: ¹ Other sources include FAU, FAI, UMTA Section 9, and unidentified.

² Improvement Allowance and Operating Funds not Included.

Article XIX and TP&D funding can be viewed as interchangeable as programmed here. Between these two sources, there is a half billion dollar shortfall primarily attributed to the planned extensions on the Concord and Fremont lines. However, some \$34 million of the shortfall can be attributed to the Daly City Turnback Phase I which is also programmed from these sources.

BART Reserves

Capital project programming as described in the previous section, would require a draw on existing BART capital reserves. The results of programming these reserve funds is shown in the table on page 88. It can be seen that a contingency balance of \$36.9 million by June 1987 is estimated.

Potential Solutions

One potential solution to reduce the \$814 million shortfall identified in the last section would be to scale back the capital program by delaying projects and finding alternative methods of financing. These are summarized as follows:

<u>Candidate Projects for Delay</u>	<u>\$ Million</u>
o North Concord/Martinez Extension (Construction)	\$137.8
o Warm Springs Extension (Construction)	360.0
o Phase II of the Daly City Turnback Project	106.9
o Aerial Barriers	10.7
Total	\$615.4
 <u>Candidate Projects for Alternate Funding</u>	 <u>\$ Million</u>
o 60 Transit Vehicles & ATC's	\$ 90.6
o Parking Expansions	32.6
o Extension Right-of-Way Acquisitions	8.9
Total	\$132.1

Furthermore, it is estimated that newly enacted state legislation (Senate Bill 1335) may make available additional funding of \$4.0 million annually during the next five fiscal years. The actual availability has yet to be determined by the California Transportation Commission in conjunction with other related legislation.

The impact of removing these projects from the five year capital program financial needs and the addition of \$20 million of newly created state funds is shown on page 89.

While this revised capital program shows some significant imbalances between required and available funds on a year-to-year basis, it also shows that the 5-year program is within \$46.5 million of being funded when grant sources are considered. It must be emphasized this conclusion can be reached only if grant sources are available as projected. Also, major projects removed from the program receive funding from another source or are deferred beyond the five-year period.

SUMMARY BALANCE SHEET OF AVAILABLE BART RESERVES
REVISED CAPITAL PROGRAM
(Estimate in 1,000's for 1987)

	<u>Line Item</u>	<u>Cumulative Total</u>
BART Reserves (Estimated for June 30, 1982)		71,311
- General Construction (Fund 01)*	17,000	
- Basic System Completion (Fund 01)*	12,671	
- System Improvement Reserve	21,001	
- Vehicle Replacement Reserve**	5,000	
- Vehicle Fire Hardening Reserve***	3,200	
- Revenue Vehicle Purchase Reserve***	10,000	
- FY 1981/82 Interest Accrued	2,439	
Less New Vehicle Purchase Requirements****		(24,606)
Anticipated Interest Income		16,429
Proceeds from Land Sales		<u>1,350</u>
Estimated Balance for Distribution		64,484
BART Obligations		(8,853)
- Land and Land Rights	121	
- Agency and Utility Agreements	1,523	
- Other Costs (Insurance, Bond Agents, etc.)	1,870	
- Local Share CA-03-0052	1,343	
- Outstanding Claims	3,996	
BART Projects Local Shares		(16,862)
Estimated Project Costs Unavailable		(19,350)
From Grant Sources		
- Project Development	5,000	
- Joint Development	1,350	
- Inventory Buildup	5,000	
- Supplement Capital Allocation	8,000	
Contingency Funds (Balance)		36,888

*Interest accrues to the Bond Fund and is available in the five year period; however, reserve balances do not change to reflect this since the interest does not actually accrue to the specific reserve.

**Interest accrues to General Project Fund "Fund 04". Use to be determined at a future time. Assumed to accrue to capital purposes for the 5-Year Plan.

***Interest accrued to "FY 1981/82 Interest accrued".

****Includes: Vehicle Replacement Reserve, Revenue Vehicle Purchase Reserve, FY 1981/82 Interest Accrued, and \$7,267,000 of System Improvement Reserve.

Updated July 14, 1982
CAPITAL PROGRAM COMMITMENTS BASIS
FUNDING REQUIREMENTS VS. ESTIMATED FUNDING AVAILABILITY
(\$ Millions)

Rev. V

FUND SOURCE	82/ 83	83/ 84	84/ 85	85/ 86	86/ 87	Within 5 Yrs	Total
UMTA (Section 3)							
Available	25.0	25.0	25.0	25.0	25.0	0.0	125.0
Required	61.5	23.4	4.7	86.6	0.9	0.0	177.1
Difference	36.5	1.6	20.3	(61.1)	(24.1)	0.0	(52.1)
Article XIX							
Available	3.1	5.7	5.7	5.7	5.7	0.0	25.9
Required	21.2	4.5	0.0	0.0	0.0	0.0	25.7
Difference	(3.8)	1.2	5.7	5.7	5.7	0.0	0.2
TP&D							
Available	6.4	6.0	6.0	6.0	6.0	0.0	30.4
Required	10.2	3.2	0.0	28.6	0.0	0.0	42.0
Difference	(3.8)	(2.8)	(6.0)	(22.6)	6.0	0.0	(11.6)
MTC Bridge Tolls							
Available	6.1	4.0	4.0	4.0	4.0	0.0	22.1
Required	11.3	1.3	1.2	11.1	0.2	0.0	25.1
Difference	(5.2)	(2.7)	2.8	(7.1)	3.8	0.0	(3.0)
Subtotal Non-BART Funds							
Available	40.6	40.7	40.7	40.7	40.7	0.0	203.4
Required	104.2	32.4	5.9	126.3	1.1	0.0	269.9
Difference	(63.6)	8.3	34.8	(85.6)	39.6	0.0	(66.5)
SB 1335							
Available	4.0	4.0	4.0	4.0	4.0	0.0	20.0
Required	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Difference	4.0	4.0	4.0	4.0	4.0	0.0	20.0
Programmed BART Reserves							
Available	2.9	6.5	0.0	17.7	0.0	0.0	27.1
Required	2.9	6.5	0.0	17.7	0.0	0.0	27.1
Difference	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Combined Total ¹							
Available	47.5	51.2	44.7	62.4	44.7	0.0	250.5
Required	107.1	38.9	5.9	144.0	1.1	0.0	297.0
Difference	(59.6)	(12.3)	38.8	(81.6)	43.6	0.0	(46.5)

Notes: ¹ Other sources include FAU, FAI, UMTA Section 9, and unidentified.

The table on page 89 shows a shortfall of \$46.5 million on a capital program of \$297 million. One potential source for covering this final increment is the contingency fund remaining in the BART capital reserves. Such use of the contingency reserve would nearly wipe out the contingency and should be considered only after all other options have been exhausted.

This revised capital program does appear achievable. (See Appendix D for additional detail.) Such a program will still result in a major increase in basic system capacity by the end of the plan period and can be accomplished if all the projected funding is forthcoming in a timely manner.

The capital program described above, however, does not include several important elements which also must be implemented. Innovative ways of funding these programs through the operating budget as part of a combined fiscal strategy will be considered in the next section.

* * *

COMPOSITE FINANCIAL PROJECTIONS

The preceding sections of this chapter have examined separately the operating projections and capital program finances. Issues have been identified in each area and solutions recommended. Financing for three important elements of the capital program was not identified and remains to be determined as part of a total fiscal strategy. These elements are:

- o Sixty (60) additional transit vehicles
- o Parking lot expansion, and
- o Extension right-of-way acquisition

Outlined below are several recommendations on how to finance these three programs.

Transit Vehicle Financing

The issue of vehicle financing has two components:

- o Availability of sufficient funds in the summer of 1982 to award a minimum vehicle contract (60 vehicles).
- o Providing sufficient funds for 90 additional vehicles for a total of 150.

The approach to meeting both these needs is through the sale of sales tax revenue bonds to be repaid from sales tax receipts. Sale of approximately \$65 million worth of revenue bonds by the summer of 1982 will provide the financial basis for award of a minimum contract. Approximately \$60 million will be available for the project after associated expenses are deducted from the sale. A Letter of Intent from the federal government would allow award of a larger initial contract which is expected to result in a more favorable unit cost per vehicle.

The viability of the revenue bond approach to financing transit vehicles depends upon sufficient revenues being available to repay the bond issue. An issue of \$65 million is estimated to have an annual payment of approximately \$8.1 million based upon an interest rate of 12% and a repayment period of 20 years.

Parking Expansion

Adequate parking at BART stations has emerged as one of the major problems faced by the BART system and its patrons. Some alternatives have become available as local bus operators have established feeder routes connecting neighborhoods with BART stations. Expansion of such services in the future is now in doubt, however, due to limited local support and cutbacks in federal operating funds.

While some capacity does exist on current feeder bus lines, it is not sufficient to provide for the ridership growth expected by BART. Accommodating projected ridership will require expanded parking facilities. Since most peak period trains are at or near capacity, the near-term parking need relates to attracting the midday rider. Once peak period capacity is expanded in 1986, more commuter parking will be required as well. The absence of this parking capacity limits patronage and revenue growth both in the near-term as well as long-term.

BART efforts to obtain grant support for parking expansion have met with only limited success, and have been particularly hurt in recent years by funding reductions. It now appears that a major parking expansion can proceed only if a new source of funding can be identified. Two potential sources exist:

- o Interim investment of BART capital reserves
- o User charges.

The overall capital plan for utilizing BART reserves involves a cash flow program which is spread over a number of years. Reserves are invested until required for capital expenditure. Investing these funds on an interim basis in expanded parking is an alternative if the rate of return is competitive with more conventional opportunities.

Access planning work estimates that by 1990 there will be a shortage of over 18,000 parking spaces systemwide. The cost of providing these parking spaces varies by location and some would offer an attractive rate of return for interim use of capital reserves. An inventory of parking expansion opportunities along with the estimated rate of return for each site should be prepared so that the alternative investment of BART reserves can be adequately evaluated. While this approach to financing parking expansion is likely to provide some funding, it is not probable that it can be a source of major long-term expansion.

The second source of funds recommended for parking expansion is user charges. If access needs are to be fully met, approximately 2,250 additional spaces should be added each year. Assuming an average cost per stall for new parking construction of \$5,000, the above requirement would cost \$11.25 million annually. Realistic parking charges, however, might be expected to net only \$2 million annually, which would be sufficient to fund about 400 to 500 spaces per year. Although well under projected requirements, this level of expansion would satisfy some portion of the unmet parking needs.

BART has previously considered, but rejected parking charges. However, decreasing transit funding in general and unavailability of grants for parking in particular, make such charges worth reconsidering. Other rail transit systems do charge for parking, the PATCO line in Philadelphia being one of the leading examples. PATCO's policy is to charge for most spaces during the morning commute, but allow free parking during midday to encourage off-peak ridership. A similar approach could be used at BART to help stimulate midday ridership. Assuming that parking charges are implemented in FY 1983/84, this approach is expected to produce approximately \$8 million during this five-year planning period.

Extension Right-of-Way Acquisition

Although funding for extensions to the BART rail system does not seem likely in the current five year planning period, the areas which would be served by such extensions continue to grow and develop. Alignments and station locations already identified may be lost to development, making an ultimate extension more difficult and expensive.

The major portion of the right-of-way in question involves future station sites which are most likely to be developed for nontransit purposes. If these sites can be obtained by BART they can be utilized on an interim basis for park/ride sites in support of the District's Express Bus operation. Additional detail on this aspect is contained in the BART Express Bus Five Year Plan adopted by the BART Board of Directors on January 7, 1982.

The Board had previously adopted on September 25, 1980 a policy on extension right-of-way acquisition priorities. The priorities for acquisition are described in that policy and are summarized on page 93. Sites to be acquired have been grouped in two categories, with staff instructed to seek funding for sites in both categories.

The current estimate of extension right-of-way which may need to be acquired during the five-year planning period is approximately \$8.9 million. No likely source of grant funding for this purpose has been identified to date.

It is recommended that BART dedicate an annual sum of \$2 million per year from Transportation Development Act (TDA) funds for this purpose. The primary impact of such a dedication would be a corresponding decrease in the financial assistance available. This approach is expected to contribute approximately \$10 million over the five year time span. The impact of this change is shown on page 94 (Second Revision, Projected Five-Year Operating Statement).

The net result of these contributions leaves a shortfall of \$54.1 million for projects which could be funded with alternative funding sources (\$ millions):

	Req'd	Potentially Available	Shortfall
o 60 Additional Transit Vehicles w/ATC	90.6	60.0	(30.6)
o Parking Expansion Projects	32.6	8.0	(24.6)
o Extension Right-of-Way Acquisition	8.9	10.0	1.1
TOTAL	132.1	78.0	(54.1)

RECOMMENDED EXTENSION RIGHT-OF-WAY AND FACILITIES EXPENDITURES

BY PRIORITY AND RANKING

PRIORITY AND RANKING	EXTENSION	USAGE	COST (\$ Millions) 1981
Ia	PITTSBURG- ANTIOCH	WEST PITTSBURG STATION	2.2
Ib	WARM SPRINGS	TRACK ALIGNMENT	0.2
Ic	LIVERMORE- PLEASANTON	DUBLIN STATION	2.2
Id	PITTSBURG- ANTIOCH	ANTIOCH STATION (HILLCREST AVE.)	1.3
Ie	WARM SPRINGS	IRVINGTON STATION (5.8 ACRES)	0.3
PRIORITY I TOTAL			6.2
IIa	PITTSBURG- ANTIOCH	NORTH CONCORD/ MARTINEZ STATION	0.6
IIb	WARM SPRINGS	MISSION STATION	2.2
IIC	PITTSBURG- ANTIOCH	PITTS./ANT. STATION (SOMERSVILLE)	2.2
IId	WARM SPRINGS	IRVINGTON STATION (3.8 ACRES)	0.3
IIe	PITTSBURG- ANTIOCH	PITTSBURG STATION (RAILROAD AVE.)	2.2
IIf	LIVERMORE- PLEASANTON	EAST LIVERMORE STATION	0.2
IIg	WARM SPRINGS	BLACOW ROAD OVERCROSSING	0.6
IIh	LIVERMORE- PLEASANTON	CASTRO VALLEY STATION	2.2
PRIORITY II TOTAL			10.5

SECOND REVISION, PROJECTED FIVE-YEAR OPERATING STATEMENT
(\$ Millions)

	Adopted Budget FY 81/82	Estimated Actual FY 81/82	Projected			
			FY 82/83	FY 83/84	FY 84/85	FY 85/86
REVENUES						
Net Rail Revenue:						
81/82 Level	\$ 45.7	\$ 50.5	\$ 50.5	\$ 50.5	\$ 50.5	\$ 50.5
Expected Increase due to Patronage Growth	-	-	4.8	8.0	10.9	13.8
Proceeds of Fare Increase	-	-	6.9	8.0	8.4	18.0 ^a
Response to Service Expansion	-	-	-	-	-	-
From Additional Off-Peak Promotion	-	-	-	1.3	2.0	2.7
Express Bus Revenue, without Local Service	1.1 ^b	1.1 ^b	1.1	1.1	1.2	1.4
Net Passenger Revenue	46.8	51.5	63.3	68.9	73.0	86.4
Other Operating Revenue	5.0	6.1	3.9	3.9	4.0	4.1
Net Parking Charges	-	-	-	2.0	2.0	2.0
Net Operating Revenue	51.8	57.6	67.2	74.3	79.0	92.5
EXPENSES						
Net Labor, Current Service	81.0	78.6	90.1	95.2	101.4	110.1
Additional Service Staffing	-	-	-	-	-	-
Total Net Labor	81.0	78.6	90.1	95.2	101.4	110.1
Express Bus & Shuttle, Excluding Local Service	5.3 ^b	6.4 ^b	7.1 ^c	7.3	8.1	8.9
Power	18.7	16.6	18.2	21.4	25.2	30.5
Additional Service Power Cost	-	-	-	-	-	-
Other Non-Labor, including Extra Marketing	15.4	15.7	17.2	19.8	21.8	24.0
Additional Service Other Non-Labor Cost	-	-	-	-	-	-
Total Operating Expense	120.4	117.3	132.6	143.7	156.5	173.5
OPERATING DEFICIT	(68.6)	(59.7)	(65.4)	(68.9)	(77.5)	(81.0)
FINANCIAL ASSISTANCE						
Property tax	3.0	4.4	4.4	4.8	5.2	5.6
Sales Tax (75%)	62.7	60.4	66.1	72.7	80.0	88.0
TUA State Assistance	5.3	2.5	3.0	3.3	3.6	4.0
Total Financial Assistance	71.0	67.3	73.5	80.8	88.8	97.6
NET OPERATING RESULT	2.4	7.6	8.1	11.9	11.3	16.6
NET OPERATING RESERVE BEGINNING BALANCE						
			7.5	4.9	5.0	5.4
CAPITAL ALLOCATIONS:						
Planning			0.5	0.5	0.5	0.5
Improvement Allowance	2.6	2.6	2.7	2.7	2.8	2.9
Revenue Bond Debt Service	-	-	5.5	8.1	8.1	8.1
Parking Expansion Allocation	-	-	-	2.0	2.0	2.0
Extension R.O.W. Acquisition	-	-	2.0	2.0	2.0	2.0
Total Capital Allocation	2.6	2.6	10.7	15.3	15.4	15.6
Application of Capital Funds	-	-	-0-	3.5	4.5	-0-
Net Capital Allocation	-	-	10.7	11.8	10.9	15.6
NET FINANCIAL RESULT: ACCUMULATED NET OPERATING RESERVE	\$ (0.2)	\$ 5.0	\$ 4.9	\$ 5.0	\$ 5.4	\$ 6.5
						\$ 4.0

^a15% fare increase, FY 1985/86.
Includes local service, and excludes shuttle service.
^cIncludes 5 months of local service.

Highlights of the funded and revised unfunded capital program are summarized on pages 96 and 97. The cash flow requirements of the revised unfunded capital program are summarized on page 98.

Composite Financial Program

The three financing strategies described above will have a direct impact on BART's operating budget as some revenues are re-directed toward supporting the implementation of these strategies. A second and final revision to the District's projected five-year operating statement summarizes these impacts on page 94 (see line items under "Capital Allocations"). This program appears achievable provided a fare increase is implemented in FY 1982/83 and again in FY 1985/86, and the projected accumulated net surplus from operations is carried forward as a funding source for each subsequent year, and some capital funds (\$3.5 million in FY 1983/84, \$4.5 million in FY 1984/85 and \$0.6 million in FY 1986/87) are allocated as necessary to fully fund the combined annual budget. The impact of this combined strategy on BART Capital Reserves is shown on page 99. It can be seen that contingency funds (balance) of \$20.2 million remain as a result of the strategy.

Financial Overview

This chapter has dealt with how BART's operating plan and capital program for the next five years can be financed. Initial projections for both operating and capital needs showed large unfunded deficits. Measures to resolve these deficits were identified and projections revised accordingly.

The operating budget can be kept in line by carefully controlling the growth of operating costs and adjusting fares to cover inflationary increases in operating costs. The express bus system needs to become a more cost-effective operation and BART must make a commitment to marketing off-peak ridership if potential growth in such service is to be realized.

The funding shortfall for the capital program poses a much larger funding problem than that identified on the operating side. A revised capital program does appear to be fundable if certain large projects are deferred pending specific separate funding, with some additional projects funded from other than traditional capital sources.

The final recommendations cover proposed sources for a portion (60) of the new transit vehicles, parking, and extension rights-of-way. Revenue bonding for the transit vehicles will be repaid from sales tax receipts. On parking expansion, it appears user charges will be necessary to fund the substantial program needed in this area. Finally, it appears that a modest right-of-way program can be established by earmarking BART TDA funds. The solutions proposed for the transit vehicles and extension right-of-way impact future operating budgets, and represent a pressure for higher fare levels.

The operating and capital programs which have been described can be achieved. Understanding the underlying assumptions and the complex interrelationships between the operating and capital budgets is vital to making the recommendations work. Taken together, the plan and its many components provide the basis for a fiscally sound operation plus a major increase in basic system capacity which will carry BART to a new threshold of service and cost-effective utilization of the region's investment in the BART system.

BART FIVE-YEAR FUNDED CAPITAL PROGRAM (\$X1000)

FMS NO.	PROJECT NAME	FUNDED BUDGET	TEST-EXP. 10-0-82	CASH FLOWS							WITHIN 5 YEARS
				82/83	83/84	84/85	85/86	86/87			
41E16	TRANSIT VEHICLE FIREHARDENING	12949	0	334	6025	6025	565	0	0		
428A	FOUR PROTOTYPE C-CARS	8625	250	3418	4957	0	0	0	0		
07CB6	KE-TRACK (KEY)	23956	13056	5400	4500	1000	0	0	0		
17H-	REGIONAL ADMINISTRATIVE CENTER	9295	339	5428	3528	0	0	0	0		
61--	INTEGRATED CONTROL SYSTEM - ICS	19406	17304	2102	0	0	0	0	0		
278B	COMMUNICATIONS-CABLE-NETWORK	11041	4821	6820	0	0	0	0	0		
99#01	RADCON	3735	500	2000	1235	0	0	0	0		
-	ALL OTHER FUNDED PROJECTS	28719	9677	10653	6054	985	0	0	1350		
	TOTAL FUNDED	118326	45947	36155	26299	8010	565	0	1350		

PART FIVE YEAR UNFUNDED CAPITAL PROGRAM - (\$1000) - (REVISED)

REVISED 7/14/82

FMS NO.	PROJECT NAME	PROGRAM YEARS					CASH FLOW YEARS					WITHIN 5 YRS	WITHIN 5 YRS
		82/83	83/84	84/85	85/86	86/87	82/83	83/84	84/85	85/86	86/87		
	VEHICLE FIRE HARVESTING	6398	0	0	0	0	166	2975	2975	282	0	0	0
428A	FOUR PROTOTYPE C-CARS	18870	0	0	0	0	0	14410	4460	0	0	0	0
428B	85 PRODUCTION C-CARS	0	0	0	118055	0	0	0	0	75517	42538	0	0
428C	2ND GENERATION ATC/PREPRODUCTION	2452	0	0	0	0	1590	862	0	0	0	0	0
428D	2ND GENERATION ATC/90 C-CARS	0	15906	0	0	0	0	0	874	9788	5244	0	0
101Y	WARN SPRGS-IRV STA EXT (DESIGN)	21300	0	0	0	0	10100	11200	0	0	0	0	0
103--	N. CONCORD/MARTINEZ EXT (DESIGN)	10800	0	0	0	0	6700	4100	0	0	0	0	0
111R	TRACK EXTENSION/TURNBACK PHASE II	34960	0	0	0	0	3100	1740	5720	12050	9800	0	0
113E	STORAGE FACILITY/TURNBACK PH II (DESIGN)	0	2330	0	0	0	0	1640	690	0	0	0	0
141--	INTEGRATED CONTROL SYSTEM-ICS	6672	0	0	0	0	1724	3566	1382	0	0	0	0
199000	WAYSIDE ATC MODS	0	19965	0	0	0	0	10000	9965	0	0	0	0
-	OTHER UNFUND PROJECTS(REVISED)	5760	1160	5847	25945	1064	3743	3177	5847	13438	13571	773	773
	TOTAL UNFUNDED (REVISED)	107212	39361	5847	144000	1064	27123	53670	31913	111075	71153	773	773

BART FIVE-YEAR REVISED UNFUNDED CASH FLOW BY SOURCE

Rev. V, 7/14/82

FISCAL YEAR	82/83	83/84	84/85	85/86	86/87	WITHIN 5 YEARS	5 YEAR TOTAL
CASH REQUIREMENTS *	27123	53670	31913	111075	71153	773	295707
UNTA FUNDS							
UNTA SECTION 3 (UMTA3)	15407	31447	19084	66661	42904	0	175503
UNTA SECTION 9 (UMTA9)	0	410	0	0	0	0	410
STATE FUNDS							
SP-620 FIXED GUIDEWAY (FIXGW)	166	5857	4042	19844	12058	0	41967
ART. XIX GUIDEWAY (PS0)	8702	8834	3275	2410	1960	0	25161
MIC FUNDS							
BRIDGE TOLLS (TOLB)	2848	2745	2719	9364	7664	0	24740
BARTO FUNDS							
GENERAL CONSTRUCTION (OPERG)	0	100	0	0	0	0	100
SYS. IMPROVEMENT RESERVE (OPERS)	0	2000	2124	2148	7167	0	13439
VEH. REPLACEMENT RESERVE (OPERV)	0	2277	669	680	0	0	3626
REV. VEH. PURCHASE RES. (OPERR)	0	0	0	9968	0	0	9968
SOURCE NOT IDENTIFIED (UNKND)	0	0	0	0	0	773	773

* BALANCE OF CASH FLOW TOTALS NOT SHOWN BY SOURCE ARE FUNDED FROM IMPROVEMENT ALLOWANCE AND OPERATING FUNDS.

SUMMARY BALANCE SHEET OF AVAILABLE BART RESERVES
REVISED CAPITAL PROGRAM
(Estimate in 1,000's for 1987)

Rev. VI - 7/25/25

	Line Item	Cumulative Total
BART Reserves (Estimated for June 30, 1982)		71,311
- General Construction (Fund 01) ^a	17,000	
- Basic System Completion (Fund 01) ^a	12,671	
- System Improvement Reserve	21,001	
- Vehicle Replacement Reserve ^b	5,000	
- Vehicle Fire Hardening Reserve ^c	3,200	
- Revenue Vehicle Purchase Reserve ^c	10,000	
- FY 1987/82 Interest Accrued	2,439	
Less New Vehicle Purchase Requirements ^d		(24,606)
Anticipated Interest Income		16,840
Proceeds from Land Sales		<u>1,350</u>
Estimated Balance for Distribution		64,922
BART Obligations		(8,853)
- Land and Land Rights	121	
- Agency and Utility Agreements	1,523	
- Other Costs (Insurance, Bond Agents, etc.)	1,870	
- Local Share CA-03-0052	1,343	
- Outstanding Claims	3,996	
BART Projects Local Shares		(15,888)
Estimated Project Costs Unavailable		(19,950)
From Grant Sources		
- Project Development	5,000	
- Joint Development	1,350	
- Inventory Buildup	5,000	
- Supplement Capital Allocation	8,600	
Contingency Funds (Balance)		20,204

^a Interest accrues to the Bond Fund and is available in the five year period; however, reserve balances do not change to reflect this since the interest does not actually accrue to the specific reserve.

^b Interest accrues to General Project Fund "Fund 04". Use to be determined at a future time. Assumed to accrue to capital purposes for the 5-Year Plan.

^c Interest accrued to "FY 1987/82 Interest accrued".

^d Includes: Vehicle Replacement Reserve, Revenue Vehicle Purchase Reserve, FY 1987/82 Interest Accrued, and \$7,267,000 of System Improvement Reserve.



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BAY AREA RAPID TRANSIT DISTRICT

1984 Short Range Transit Plan

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July 1984

BART FACT SHEET

FY 1983/84 DATA

****FIXED FACILITIES****

Mainline Track: Revenue service is provided over 71.5 miles of double mainline track, of which approximately 20 miles are in subway, 24 elevated, and 27 at grade.

Stations: There are 34 stations including 14 in subway, 13 elevated, and 7 at grade. Average station spacing is between 1/2 to 1 mile within and adjacent to San Francisco, Oakland, and Berkeley downtown areas, and 2 to 4 miles apart in suburban areas. Automatic fare collection equipment is located in each station to vend and process patron tickets. BART provides approximately 22,300 free parking spaces at 23 stations, and 200 spaces at one additional station at a daily charge of 25¢ per space.

Maintenance Facilities: Equipment maintenance is performed at three Eastbay yards located in Hayward, Concord, and Richmond. A special track geometric vehicle is used to analyze the running rails and electrical third rail. Maintenance of right-of-way is routinely performed during off-revenue hours.

Administrative/Central Control Center: Trains are automatically controlled by wayside equipment and supervised by the central computer at BART headquarters located above the Lake Merritt Station in Oakland. Operators on board the leading A-car of each train have full voice communication with central control personnel and passengers on board, and can override automatic controls should the need arise.

****ROLLING STOCK****

Fleet Inventory: As of June 30, 1984, BART owns 137 control equipped A-cars and 303 trail B-cars. Of these vehicles, 130 A-cars and 289 B-cars are in the operating fleet. The remaining vehicles are rotated out for fire hardening improvements with the exception of one A-car which is retained as an engineering test vehicle. Each vehicle contains 72 seats and is approximately 70 feet long by 10.5 feet wide.

Trains: Train lengths range from 3 to 10 cars and consist of 2 A-cars (one at each end) and between 1 and 8 B-cars. Corresponding seating capacity is between 216 and 720 passengers. Top speed is 80 mph with a systemwide average of 33 mph, including station stops. Trains stop at each station along a designated route.

****SERVICE HOURS****

Rail: Rail service is provided between the hours of 5 am and 1:30 am Monday through Friday, 6 am to 1:30 am on Saturdays, and 9 am to 1:30 am on Sundays and major holidays. Closings for individual stations are timed with the schedule for the last train beginning at approximately midnight. Service frequencies (in minutes) for individual routes and line segments are as follows:

	TRANSBAY ROUTES			EASTBAY Richmond- Fremont	CBO LINE SEGMENT	
	Concord- Daly City	Fremont- Daly City	Richmond- Daly City		San Francisco	Downtown Oakland
WEEKDAY						
Peak Hour	7.5	15	15	15	3.8	3.8
Midday	15	15	15	15	5	5
Night	20	*	*	20	20	10
SATURDAY						
Daytime	20	20	20	20	6.7	6.7
Night	20	*	*	20	20	10
SUNDAY/HOLIDAY						
All Day	20	*	*	20	20	10
*Requires transfer between Concord/Daly City and Richmond/Fremont routes						

Express Bus: The District also provides express bus service within major travel corridors not served by rail in both Alameda and Contra Costa counties in the Eastbay. Bus service frequencies (in minutes) are as follows:

	Eastern Contra Costa	Western Contra Costa	Central Contra Costa-Alameda	Eastern Alameda
WEEKDAY				
Peak Hour	30	30	30	30
Midday	30	30	30	30
Night	60	*	60	60
SATURDAY				
Daytime	60	60	60	60
Night	60	60	60	60
SUNDAY/HOLIDAY				
All day	60	*	60	60
*No service during this time period.				

1 9 8 4

B A Y A R E A R A P I D T R A N S I T D I S T R I C T

S H O R T R A N G E T R A N S I T P L A N

FOR THE FIVE-YEAR PERIOD

JULY 1984 THROUGH JUNE 1989

Adopted June 21, 1984

The preparation of this report has been financed in part through a grant from the United States Department of Transportation, Urban Mass Transportation Administration under the Urban Mass Transportation Act of 1964, as amended, as passed through the Metropolitan Transportation Commission.

The contents of this report reflect the views of BART, which is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policy of the U. S. Department of Transportation. This report does not constitute a standard, specification, or regulation.

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT
BOARD OF DIRECTORS

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Keith Bernard
General Manager

Prepared By: Planning and Analysis Department
Bay Area Rapid Transit District
800 Madison Street
Oakland, California 94607

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S U M M A R Y

The transit agencies of the Bay Area have, in addition to the comments of their many regular patrons, the benefit of a special rider, the Phantom Commuter, who reports on the quality of transit services regularly in the San Francisco Examiner. The Phantom samples typical commutes, along with the pluses and minuses of using the many options available to Bay Area residents. The one-to-four phantom rating of public transit means anything from "you're better off walking" to "sell your car."

July 1984

Dear Phantom Commuter:

I have followed your column in the San Francisco Examiner with great interest and I value your transit service assessments based on your sampling of BART and other Bay Area transit operators. I remember the time you wrote about how unreliable BART was and how you told Bay Area residents not to hold their breath for any improvement. If I remember correctly, out of a possible four "phantoms," you rated BART one for short trips and two for longer ones. According to your definition, these respective ratings mean "you're better off walking" and "not pleasant, but you'll get there." Not too long ago you sampled BART service again. This time you wrote about how those early growing pains had been successfully ironed out and how trains ran nearly 95% on time. You then rated BART three phantoms, meaning "an efficient, comfortable commute." I remember you saying that BART did not receive a four "phantom" or "sell your car" rating only because trains were so crowded.

The purpose of this letter is to let you know that we at BART are working very hard for that four-phantom rating! Yes, trains do run 95% on time, and better than 99% of all trains do operate as scheduled. This progress, however, has led to more and more people using the system, and for good reason: BART is a sensible, efficient and economical way to get around the Bay Area. But there's a limit to what the existing system can deliver in terms of carrying capacity without compromising safety and reliability. The highest service frequency BART now provides is 16 Transbay trains in the peak hour and direction. By fall of 1984, we plan on increasing this to 17 trains in the peak hour which is the highest service frequency the existing system will allow. Even if higher frequency service was possible, we're now only two vehicles short of maximum fleet utilization. The bottom line is BART needs more cars along with other improvements to enable trains to be safely and reliably operated at higher frequencies.

By necessity, this requires a long-term commitment to support a host of activities beginning at the drawing boards and ending at ribbon-cutting ceremonies which mark the startup of new services. The strategy for realizing this is contained in BART's Short Range Transit Plan (S RTP), an annually updated document developed for the purpose of improving the BART system. It identifies goals and service objectives, the projects needed to achieve them, and the financial requirements for realizing the improvement program. All operational aspects are considered, with the thrust of the Plan reflecting BART's current top priority of expanding capacity in order to accommodate increasing ridership.

I am pleased to report we're well into the process of realizing a greater share of BART's potential for serving Bay Area travel needs:

- o An order has been placed for 150 new cars which are to contain more reliable automatic train control units (these new units will also be installed on BART's existing slant-nosed A cars).
- o A replacement for the central train supervising computer is being developed to allow for greater than 49-train service, as limited by the existing computer system.
- o An additional subway track through downtown Oakland is nearing completion and will greatly enhance operational flexibility and reliability as service frequencies are increased.
- o The current BART fleet is being "fire hardened" for improved safety.
- o Plans are underway to increase the train turnback capability at Daly City (which limits service frequencies systemwide) and to construct a yard there for added operating economy.

Once these major projects are in place, the system will be capable of operating with more trains at higher frequencies than is currently possible. As I said earlier, the first service improvement will occur this coming fall with the addition of two commute period trains: one Fremont-Daly City train in the peak hour (this will raise scheduled capacity for the existing system to its 17 train per hour limit) and one Concord-Daly City train just outside the peak hour. With these additions, the number of trains operating simultaneously on the system will increase from 43 to 45. As new C-cars are delivered and become available for service, the period of high frequency, 17-train/hour service will be lengthened by adding more trains on the system. By April 1986, the number of trains operating on the system will be increased to 48. The completion of important capacity expansion projects will allow BART to increase its maximum service frequency to 19 trains per hour beginning in July 1987, at which time the system will operate with a total of 53 trains in service.

The System Performance and Train Detection Studies, now nearing completion, are to identify what additional modifications will be required, if any, so that BART may increase its service frequency to 26 trains per hour with 74 trains in service. The result of BART's **Capacity Expansion Program** will be to:

- o Reduce the minimum scheduled headway, or time between trains, from 3 minutes 45 seconds currently to 2 minutes 15 seconds.
- o Increase the maximum number of trains in service from 43 currently to 74.
- o Increase the number of cars in the BART fleet from 439 currently to 589.

The SRTP also addresses other very important concerns. A shortage of station parking is a definite deterrent to many people who would like to use BART. The system's 22,200 parking spaces aren't enough. We expect to add approximately 1,200 more spaces during the 1984/85 fiscal year. We are very aware that these new spaces will not be enough. The SRTP outlines BART's 5-year program for improving all kinds of access to BART, of which parking is just one. For example, the SRTP calls for streamlining BART's Express Bus routes so that more direct freeway service can be provided. The start-up of this new service is to be coordinated with the completion of the new freeway park/ride lots to be located along Interstates 80, 580, and 680, and State Route 4. BART will also continue to work closely with other Bay Area transit operators to improve coordination of service, fares, and transfers.

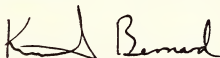
No one likes to pay double fares or to exit a station and just miss a bus connection, tail lights still in sight. We recognize these problems and by June 1985 we expect to see some very positive results in the Eastbay as BART and AC Transit embark on a program to coordinate service between bus and rail.

Increased traffic congestion brought on by population and employment growth has heightened interest in future BART extensions. BART, in concert with affected cities and local agencies, is actively engaged in a program to preserve rights-of-way in order to maintain the feasibility of future rail extensions.

The SRTP also addresses safety, reliability, productivity, development of station areas, and costs. Where our efforts will be directed is best represented by BART's goals and objectives which are annually updated and adopted by the District Board of Directors as part of the SRTP process. This policy is summarized in Figures 1, 2, and 3 starting on page S-4. An overview of BART's Capacity Expansion Program is presented in Figure 4 on page S-8. And, finally, financial requirements needed to realize the SRTP's five-year program are summarized in Figures 5, 6, and 7 beginning on page S-9.

It took more than five years for BART to go from a "one" to a "three-phantom commuter" rated system. The 2,000 plus employees at BART are aiming for four! And, with the support of you and the Bay Area, we will work diligently to make it happen.

Sincerely,

A handwritten signature in dark ink, appearing to read "Keith Bernard". The signature is fluid and cursive, with the first name "Keith" and last name "Bernard" clearly distinguishable.

Keith Bernard, General Manager
Bay Area Rapid Transit District

Attachments

Figure 1

BART GOALS FOR FY 1984/85

1. Operate scheduled 4-route weekday service with route headways of 15 minutes or less during peak and midday periods and expand service within feasible, technical, and financial limits including improved peak-hour frequency of service and capacity where needed.
2. Improve the reliability performance of the present BART system.
3. Continue to improve BART system and patron safety and emergency preparedness.
4. Increase system utilization by promoting BART travel for all purposes with special emphasis on offpeak and reverse commute trips.
5. Fund and implement the necessary capital improvements and replacements to the system.
6. Operate within available funds without incurring an unfunded deficit.
7. Maximize the contribution to operating costs from passenger revenues, consistent with reasonable fare levels, to achieve a farebox ratio above 50%.
8. Make every effort to achieve District objectives for female and minority employment and minority business enterprise participation.
9. Improve system access by means of a comprehensive program of parking expansion, BART feeder services, transit coordination, and special projects addressing elderly and handicapped mobility.
10. Develop station area sites for the realization of increased patronage and revenues, and to enhance the communities BART serves.
11. Extend BART trunk lines within Bay Area travel corridors where feasible and in support of regional land use policies.

Figure 2: BART PERFORMANCE OBJECTIVES FOR FY 1984/85

PROGRAM AREA A: PATRONAGE & TRAVEL PROMOTION

- At a minimum, achieve normal growth projections for average daily patronage as follows (in 1,000's):

	<u>Jul-Sep</u>	<u>Oct-Dec</u>	<u>Jan-Mar</u>	<u>Apr-Jun</u>	<u>FY 1984/85</u>
Weekday	207.3	213.8	213.8	218.4	213.3
4-Hr Pk	102.1	104.6	105.8	107.5	105.0
Offpeak	105.2	109.2	108.0	110.9	108.3
Saturday	85.3	81.3	86.9	90.7	86.1
Sunday	48.6	46.6	51.2	52.8	49.8

- In addition to the above, actively promote offpeak ridership to achieve a 3% increase in travel as follows (1,000's):

	<u>Jul-Sep</u>	<u>Oct-Dec</u>	<u>Jan-Mar</u>	<u>Apr-Jun</u>	<u>FY 1984/85</u>
Weekday Offpeak	2.8	2.9	2.9	3.0	2.9
Saturday	2.4	2.3	2.5	2.6	2.4
Sunday	1.4	1.3	1.5	1.5	1.4

- Continue sampling procedure to evaluate train and station area cleanliness, and maintain train and station cleanliness at or above an evaluation rating of 90%.
- Continue concern for customer relations among public contact personnel such that the rate of patron complaints about this issue remains below 8.75 per million trips.
- Continue public announcement procedures and practices such that the rating for four categories of announcements in the Passenger Services Sampling Survey averages at least 95%.

PROGRAM AREA B: BASIC SYSTEM SERVICE & CAPACITY

- Balance capacity where possible such that load factors for peak period trains which can be lengthened or shortened (consists between 4 and 9 cars) are relatively equal and provide offpeak service such that no train load factor exceeds 1.05.
- Operate weekday peak period Transbay service in the peak direction providing at least 98% of scheduled train throughput and 97.5% of scheduled car throughput on a monthly average basis.
- Make available 106 A-cars and 261 B-cars for revenue service by 4 a.m. (weekdays).
- Increase peak period capacity from 43 trains to 45 trains by adding one train each to the two most heavily traveled routes (Fremont/Daly City and Concord/Daly City).

PROGRAM AREA C: EXTENSION SERVICE & CAPACITY

- Secure UMTA approved workscope in order to complete the Alternatives Analysis/Draft Environmental Impact Requirements for Phase I of BART Extension policy by June 30, 1985.*
- Complete acquisition of purchasable station sites in Phase I of the BART Extension policy and complete acquisition of all planned park/ride lot sites by June 30, 1985.*
- Prepare Transit Center Plans/Agreements for West Pittsburg, Dublin and Warm Springs by June 30, 1985.*
- Revise express bus system for park/ride/freeway operation, using newly constructed park/ride lots, interim park/ride lots, and high density express bus stops.*

PROGRAM AREA D: SYSTEM ACCESS

- Provide 1,190 additional BART-owned parking spaces at existing rail stations.
- Implement full schedule coordination between BART and AC Transit by June 1985.

PROGRAM AREA E: RELIABILITY

- Complete 99% of all monthly scheduled dispatches.
- Conduct operations such that on a monthly basis 95% of daily terminal-to-terminal runs are completed within 5 minutes of scheduled run times with at least 93% during the AM and PM peak periods for commute days.

* These objectives are subject to Board review and approval of specific implementation projects.

Figure 2: BART PERFORMANCE OBJECTIVES FOR FY 1984/85 (Continued)

3. Provide service such that 98% of peak period trains do not experience a primary delay exceeding 7 minutes and 94% are not delayed more than 7 minutes from all causes.
4. Conduct operations such that on a quarterly basis 94.0% of all patron trips are completed on-time. All patron trips are on-time when trains run not more than 5 minutes late or 60 seconds early.
5. Provide service such that passenger offload rates remain at or below the following: vehicle equipment = 1.10; wayside equipment = 0.05; operations and other = 0.20; and the total = 1.35.
6. Maintain the overall AFC technician maintenance incident rate at or below 0.30 incidents per 1,000 passenger trips, and maintain or exceed a 6 AM average weekday availability rate of 95% for entry/exit gates and 90% for ticket vendors.
7. Maintain a 6 AM average weekday availability of 95% for elevators and 93% for escalators.
8. Maintain express bus on-time performance such that 95% of all runs arrive at their final destination within 5 minutes of schedule.

PROGRAM AREA F: SAFETY AND SECURITY

1. Provide sufficient police coverage such that the rate of patron-related crimes does not exceed 18.5 per million passengers.
2. Continue to provide an environment for patron circulation through trains and stations such that the accident rate does not exceed 17.7 per million passengers.
3. Reduce the total annual amount of employee lost time due to injuries as a percent of time worked to 0.50% or less.
4. Conduct a minimum of one emergency plan exercise per month involving emergency response agencies.

PROGRAM AREA G: FINANCIAL & OPERATIONAL EFFICIENCY

1. Maintain a funded budget and farebox ratio of no less than 45.6% including 14.2% for BART express bus operations and 47.4% for rail operations.
2. Maintain a rail cost per passenger mile of 18.1¢ or less.
3. Achieve a level of service output such that 12,434 vehicle miles are produced per equivalent District employee (based on 2,000 hours worked, including overtime, excluding capitalized labor).
4. Improve system utilization (passenger miles per seat mile) to 35.2% through continued monitoring of train capacity to match passenger demand patterns.
5. Maintain a paid sick leave rate of no more than 3.5% (9.1 paid days annually per employee).
6. Transmit key performance reports to the Board of Directors, Department Managers, and/or other recipients within the following number of working days after the close of each reporting period: Monthly Patronage Report (10), Monthly Budget Performance Report and Quarterly Affirmative Action Report (15), Quarterly Financial Statements (25), Quarterly Performance Report on System Objectives (35), Quarterly Operations Performance Report (45), and the Annual Report (75).

PROGRAM AREA H: AFFIRMATIVE ACTION

1. Achieve work force representation objectives for women and minorities in accordance with the 1983 Affirmative Action Plan.
2. Encourage efforts to achieve 21% minority business enterprise participation for all District contracts determined to have MBE opportunities, with 18% DBE and 3% WBE participation for federally assisted contracts.

PROGRAM AREA I: STATION AREA DEVELOPMENT

1. Complete predevelopment planning at Pleasant Hill and Walnut Creek.
2. Initiate a station area development plan for the Richmond Station.
3. Assuming completion of predevelopment planning and favorable market conditions, prepare and issue Requests for Proposals (RFP's) for projects at Walnut Creek and Pleasant Hill.

Figure 3: BART PERFORMANCE OBJECTIVES FOR FY 1986/87 THROUGH FY 1988/89

PROGRAM AREA A: PATRONAGE AND TRAVEL PROMOTION

- o Maintain acceptable quality of service as reflected by accuracy of service announcements, employee helpfulness, and station cleanliness in support of achieving the following patronage levels at current fares as of the fourth quarter of each fiscal year (in 000's).

	1986	1987	1988	1989
Average Weekday:	239.6	255.1	268.5	285.2
4-Hour Peak:	123.8	130.1	137.7	146.3
Offpeak:	115.8	123.0	130.8	138.9
Saturday:	90.8	95.6	100.7	106.1
Sunday:	52.5	55.4	58.2	61.4

PROGRAM AREA B: BASIC SYSTEM SERVICE AND CAPACITY

- o Operate 4-route weekday service with the capability of providing sustained 3 minute 10 second headways by July 1987 following the completion of the Daly City turnback reducing to 2 minute 30 second-headways by July 1988 following the completion of remaining capacity expansion projects.
- o Support the following weekday car requirements (as of the fourth quarter of each fiscal year):

<u>Service Requirements</u>	1986	1987	1988	1989
A-Cars	115	115	115	115
B-Cars	272	272	272	272
C-Cars	22	42	78	112
TOTAL	409	429	465	499

<u>Service Distribution</u>	1986	1987	1988	1989
On-Line	366	386	408	437
Spares	43	43	57	62
Fire Hardening	0	0	0	0
TOTAL	409	429	465	499

<u>Total Fleet</u>	1986	1987	1988	1989
A-Cars	136	136	136	136
B-Cars	303	303	303	303
C-Cars	26	146	150	150
TOTAL	465	585	589	589

PROGRAM AREA C: EXTENSION SERVICE AND CAPACITY

- o Continue to implement the Extension Right-of-Way and Facilities Expenditures program.

PROGRAM AREA D: SYSTEM ACCESS

- o Continue to implement access and express bus improvements as identified in the District's Access Implementation Program and Express Bus Plan.

PROGRAM AREA E: RELIABILITY

- o At a minimum, maintain current reliability objective level performance under higher density train operations pending additional improvements which may be identified by the System Performance Study.

PROGRAM AREA F: SAFETY AND SECURITY

- o Maintain a rate of patron-related crime below those for District communities and other transit systems in the Bay Area and in other metropolitan areas.

PROGRAM AREA G: FINANCIAL AND OPERATIONAL EFFICIENCY

- o Continue to provide cost-effective and efficient service through the achievement of key financial and operational efficiency objectives.

PROGRAM AREA H: AFFIRMATIVE ACTION

- o Seek to achieve District objectives for work force representation of minorities and women and for minority business enterprise contract activities.

PROGRAM AREA I: STATION AREA DEVELOPMENT

- o Continue to work with local jurisdictions in developing station specific plans.

Figure 4

BART CAPACITY EXPANSION PROGRAM

Minimum Scheduled Headway	Projects Required to Achieve or Support This Headway	Project Completion Dates	Expanded Service Start Dates	Peak Hour Trains, Peak Direction Transbay	Peak Period Capacity On-Line Trains ^a	Spare Cars	Total Cars Required	Available Fleet A/C - Cars @ 85% B - Cars @ 90%	Operating Fleet Size
3' 45"	Current Service	---	Jul 1980	16	43 ^b	321 ^b	40 ^b	361	368 ^c
	Pending successful simulation & implementation of train control mode	Jun 1984	Fall 1984	17	45 ^b	327 ^b	40 ^b	367	371 ^d
	Fire Hardening (cars completed)	Dec 1985	Dec 1985	17	45 ^b	338 ^b	40 ^b	378	439
3' 30"	Delivery of 32 C-cars	Mar 1986	Apr 1986	17	48 ^b	369 ^b	40 ^b	409	471
3' 10"	KE Track	Nov 1985							
	Fire Hardening (removal of vent separation)	Dec 1985							
	ICS	Jun 1986							
	Daily City Turnback	May 1987 ^e							
	Delivery of 78 additional C-cars	Jan 1987	Jul 1987	19	53	408	57	465	549
2' 30"	Daily City Yard	Dec 1987 ^e							
	New On-board ATC	May 1987							
	Delivery of 40 additional C-cars (150 total)	Jun 1987							
	Primary Detection Project; Wayside ATC Modifications	To Be Determined							
	To be determined based on System Performance Study	Completion of SPS, Jun 84	Jul 1988 ^f	24	62	437	62	499	589
2' 15"	To be determined based on System Performance Study	Completion of SPS, Jun 84	Jul 1989 ^f	26	74	452	62	514	589

a. Number of consists on-line; throughput equivalent to one extra train (on Richmond/Daly City Route).

b. One 7-car consist is scheduled for revenue service but is reserved as a spare when required (included in the "On-Line" column). This consist will be lengthened when the KE track becomes operational, and this consist can be laid up there.

c. Excluding 16 vehicles out for fire hardening and three damaged cars out awaiting repairs. Includes 7 more A-cars than can be put in service due to headway constraints limiting the total number of trains on-line.

d. Excluding 16 vehicles out for fire hardening; three damaged cars returned to service following completion of repairs.

e. Provided Letter of No Prejudice received by May 1984.

f. Includes PUC approval.

g. Depends on results and recommendations of Train Detection Study.

Figure 5

BART FIVE-YEAR OPERATING BUDGET SUMMARY

(\$ Millions)

	FY 84/85	FY 85/86	FY 86/87	FY 87/88	FY 88/89
1. Net Operating Revenue	74.7	91.7	96.6	103.9	120.3
2. Total Operating Expense	149.7	167.0	183.0	201.7	224.9
3. Operating Deficit	(75.0)	(75.3)	(86.4)	(97.8)	(104.6)
4. Total Financial Assistance	71.6	75.3	86.3	95.9	104.6
5. Net Financial Result	(3.4)*	(0.0)	(0.1)*	(1.9)*	(0.0)
6. Net Operating Reserve, Beginning Balance	5.7	5.7	5.7	5.7	5.7
7. Net Operating Reserve, Ending Balance	5.7	5.7	5.7	5.7	5.7
Financial Indicators:					
Farebox Ratio	45.6%	51.6%	50.1%	49.0%	51.3%
Operating Ratio	50.0%	54.9%	52.8%	51.5%	53.5%
Rail Cost Per Passenger Mile	18.1¢	18.6¢	19.1¢	19.6¢	20.7¢

* The District will endeavor to make up the remaining deficit during the year through further efficiencies, stringent cost control efforts, and stimulation of additional ridership beyond that forecasted.

Figure 6

FIVE-YEAR CAPITAL PROGRAM SUMMARY

Expenditures, Cash Flow Basis
(000)

	Budgeted FY 84/85	Projected FY 85/86	Projected FY 86/87	Projected FY 87/88	Projected FY 88/89	Projected Within 5 Year	5-Year Total
Vehicle Funded	25,867	74,448	84,916	0	0	1,013	186,244
Undeferred	0	4,073	116,436	0	0	0	120,509
Facilities, Mainline							
Funded	25,524	10,792	3,367	2,106	0	744	42,533
Undeferred	22,040	63,498	32,148	9,518	0	10,738	137,942
Facilities, Station & Access							
Funded	4,250	2,530	2,000	2,000	1,125	2,792	14,697
Undeferred	4,456	2,839	728	0	0	32,561	40,584
Facilities, Support							
Funded	106	0	0	0	0	53	159
Undeferred	0	0	0	0	0	1,250	1,250
Train Control							
Funded	12,199	8,065	1,745	0	0	224	22,233
Undeferred	275	3,600	5,455	5,455	5,455	0	20,240
AFC & Communication							
Funded	6,343	1,681	0	0	0	292	8,316
Undeferred	0	0	0	0	0	0	0
Electrification							
Funded	770	0	0	0	0	904	1,674
Undeferred	330	2,850	4,287	1,700	0	0	9,167
Procurements							
Funded	2,618	165	0	0	0	253	3,036
Undeferred	0	3,633	1,096	400	770	0	5,899
Other Categories							
Funded	10,844	17,217	13,785	9,892	17,811	100	69,649
Undeferred	0	0	0	0	0	0	0
ALL CATEGORIES							
Funded	88,521	114,898	105,813	13,998	18,936	6,375	348,541
Undeferred	27,101	80,493	160,150	17,073	6,225	44,549	335,591
GRAND TOTAL	115,622	195,391	265,963	31,071	25,161	50,924	684,132

Figure 7

FIVE-YEAR CAPITAL PROGRAM SUMMARY

Sources, Cash Flow Basis
(000)

	Budgeted FY 84/85	Projected FY 85/86	Projected FY 86/87	Projected FY 87/88	Projected FY 88/89	Projected Within 5 Year	5-Year Total
UMTA Funds Funded	32,464	27,644	24,869	0	0	2,060	87,037
UMTA Funds Unfunded	25,410	70,380	118,753	13,458	3,940	27,088	259,029
FHWA Funds Funded	0	0	0	0	0	0	0
FHWA Funds Unfunded	0	0	0	0	0	8,229	8,229
State Funds Funded	11,998	14,363	5,219	0	0	613	32,193
State Funds Unfunded	700	881	22,679	1,066	1,066	0	26,392
MTC Funds Funded	7,148	3,351	919	0	0	460	11,878
MTC Funds Unfunded	991	9,232	18,718	2,549	1,219	9,232	41,941
BARTD Funds Funded	36,911	69,540	74,806	13,998	18,936	3,242	217,433
BARTD Funds Unfunded	0	0	0	0	0	0	0
ALL SOURCES Funded	88,521	114,898	105,813	13,998	18,936	6,375	348,541
ALL SOURCES Unfunded	27,101	80,493	160,150	17,073	6,225	44,549	335,591
GRAND TOTAL	115,622	195,391	265,963	31,071	25,161	50,924	684,132

I N T R O D U C T I O N

BART BACKGROUND AND PURPOSE OF SRTP

The BART District was formed in 1957 by the State Legislature in response to Bay Area growth forecasts and related future transportation needs. Following the major construction program, initial revenue operations, starting in September 1972, brought to light a variety of unanticipated problems. Over the past several years, intensive efforts have been directed toward improving reliability, service quality and capacity. This process has produced a greater understanding of the system's problems, together with "fixes" which have significantly improved train service.

BART's short-range plan presents a strategy for continued progress towards achieving a greater share of the system's full potential through increased capacity and improved system performance. The plan is the result of an ongoing process involving the District Board of Directors and management for the purpose of identifying future capital and financial requirements.

The document is divided into three chapters. The first identifies key issues and assumptions either carried over from the previous planning cycle or those which have more recently emerged. These concerns are then incorporated into the performance evaluation and planned improvements portion of the plan which is presented in Chapter II. The District's policy framework, consisting of annually adopted program area objectives, provides the framework for this discussion. Chapter III then presents the District's financial plan for supporting the capital and operating improvements identified in the previous chapter.

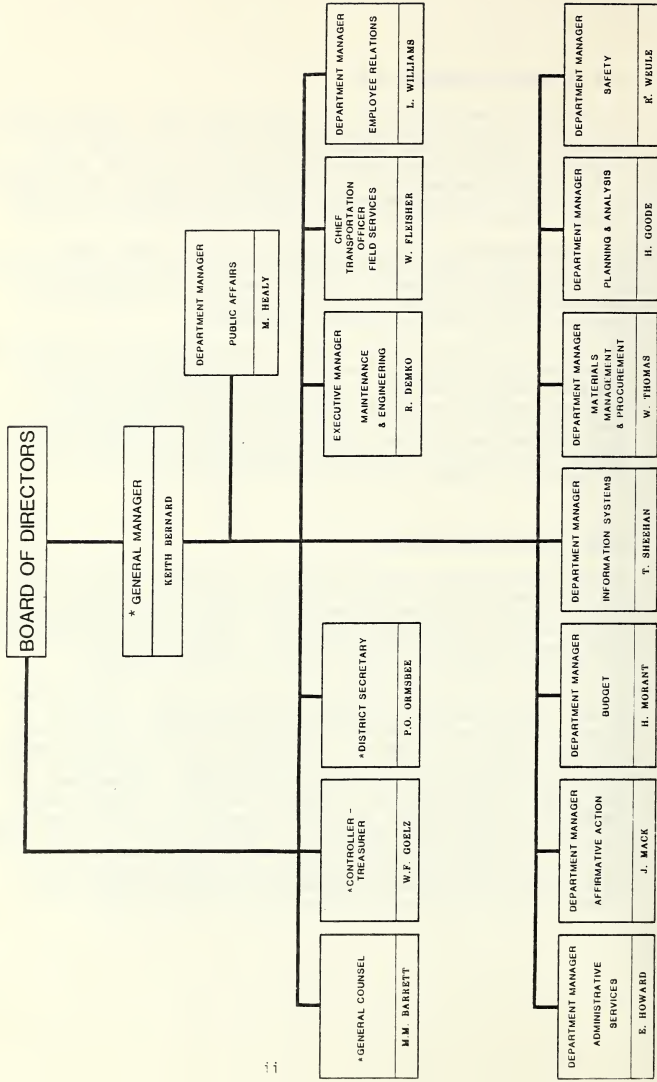
DISTRICT ORGANIZATIONAL OVERVIEW

Current BART organization reflects a management structure which has evolved over the past 11 years to carry out District programs and policies (see Figure i-1 on page ii). Fourteen department managers report directly to the General Manager who in turn reports to a nine-member elected Board. As Board appointed officers, three of the department managers also report directly to the Board of Directors. These are the General Counsel, Controller/ Treasurer, and District Secretary.

As the legislative body of the District, the Board of Directors establishes BART policy. Each year the Board of Directors reviews and adopts a set of goals and program area performance objectives reflecting District needs. The goals are presented in Figure i-2 on page iii. This process is part of the annual budget and short range planning cycle, and serves to guide management in budgeting for and organizing BART's labor force (consisting of approximately 2,200 employees) so that desired levels of performance may be achieved. Additionally, progress towards implementing important programs and capital improvements is continually monitored and reviewed. Other projects continue to be identified as part of the SRTP process in an effort to improve BART's effectiveness and operating performance even further. The Project Review Board, composed of key department managers, plays an important role in this process by recommending to the General Manager project priorities based on staff analysis and evaluation of District needs.

FIGURE i-1

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT



* BOARD APPOINTEE

Keith Bernard
 KEITH BERNARD
 JUNE 23, 1981

Figure i-2

BART GOALS FOR FY 1984/85

1. Operate scheduled 4-route weekday service with route headways of 15 minutes or less during peak and midday periods and expand service within feasible, technical, and financial limits including improved peak-hour frequency of service and capacity where needed.
2. Improve the reliability performance of the present BART system.
3. Continue to improve BART system and patron safety and emergency preparedness.
4. Increase system utilization by promoting BART travel for all purposes with special emphasis on offpeak and reverse commute trips.
5. Fund and implement the necessary capital improvements and replacements to the system.
6. Operate within available funds without incurring an unfunded deficit.
7. Maximize the contribution to operating costs from passenger revenues, consistent with reasonable fare levels, to achieve a farebox ratio above 50%.
8. Make every effort to achieve District objectives for female and minority employment and minority business enterprise participation.
9. Improve system access by means of a comprehensive program of parking expansion, BART feeder services, transit coordination, and special projects addressing elderly and handicapped mobility.
10. Develop station area sites for the realization of increased patronage and revenues, and to enhance the communities BART serves.
11. Extend BART trunk lines within Bay Area travel corridors where feasible and in support of regional land use policies.

SYSTEM OVERVIEW

The District currently operates trains over 71 miles of double mainline track, of which 20 miles are in subway, 24 miles are on elevated structures, and 27 miles are at grade. The system's 34 stations include 13 elevated, 14 subway, and 7 at grade which are spaced approximately 1/2 mile apart in downtown San Francisco and Oakland, and approximately 2 to 4 miles apart in suburban areas. Automatic fare collection equipment is located in each station to vend and process patron tickets. Free parking is provided at 22 stations in addition to one fee lot at Lake Merritt station. Approximately 22,200 automobile spaces are provided systemwide.

Trains are from 3 to 10 cars in length and contain one control equipped vehicle (A-car) at each end with interior vehicles (B-cars) making up the remainder of each consist. All station platforms are approximately 700 feet long to accommodate maximum 10-car trains. As of December 1983, BART's vehicle fleet consists of 137 A-cars and 303 B-cars.

Trains are formed and dispatched from 3 maintenance yards in the Eastbay. The central train control computer at the Lake Merritt Administration Building maintains overall supervision of train movements. Operators onboard the leading A-car of each train have full voice communication with Central Control personnel and passengers onboard, and can override automatic controls should the need arise.

To date, approximately \$1.3 billion has been invested in system construction and equipment. This investment has been financed primarily through local sources including property and sales tax revenues generated within the three BART District counties.

CURRENT SERVICE OVERVIEW

Rail service is provided between the hours of 5 a.m. and 1:30 a.m. Monday through Friday, 6 a.m. to 1:30 a.m. on Saturdays, and 9 a.m. to 1:30 a.m. on Sundays and major holidays. Closings for individual stations are timed with the schedule for the last train beginning at approximately midnight. Service frequencies (in minutes) for individual routes and line segments are as follows:

	TRANSBAY ROUTES			EASTBAY	CBD LINE SEGMENT	
	Concord/ Daly City	Fremont/ Daly City	Richmond/ Daly City	Richmond/ Fremont	San Francisco	Downtown Oakland
WEEKDAY						
Peak Hour	7.5	15	15	15	3.8	3.8
Midday	15	15	15	15	5	5
Night	20	*	*	20	20	10
SATURDAY						
Daytime	20	20	20	20	6.7	6.7
Night	20	*	*	20	20	10
SUNDAY/HOLIDAY						
All Day	20	*	*	20	20	10
*Requires transfer between Concord/Daly City and Richmond/Fremont routes						

The District also provides express bus service within major travel corridors not served by rail in both Alameda and Contra Costa counties. Bus service frequencies are as follows:

	<u>Eastern Contra Costa</u>	<u>Western Contra Costa</u>	<u>Central Contra Costa-Alameda</u>	<u>Eastern Alameda</u>
WEEKDAY				
Peak Hour	30	30	30	30
Midday	30	30	30	30
Night	60	*	60	60
SATURDAY				
Daytime	60	60	60	60
Night	60	60	60	60
SUNDAY/HOLIDAY				
All day	60	*	60	60
*No service during this time period.				

Trains can travel up to 80 miles per hour. Normal operations are based on a 70 mile per hour maximum which results in an average system speed of 32.7 miles per hour including station stops. Regular adult fares and travel times for the rail system are as follows:

Fares

[illegible]

Time

A 4.8% rail fare discount is provided through the sale of \$21 tickets for \$20. Free transfers can be made between all BART trains. Special agreements between BART and most other Bay Area operators permit up to a 50% discount for connecting transit service (on a round-trip basis). Additionally, a \$24 BART/MUNI monthly pass is also available, allowing for unlimited BART and San Francisco/MUNI travel within San Francisco.

Fares for handicapped persons, students 5-12 years of age, and persons 65 years of age and older are 10% of the regular adult fares. Children under 5 can ride free. Regular express bus fares are 60¢ and 90¢ for one and two zone rides, respectively (with a free transfer worth 60¢ for BART patrons leaving a station). Discount bus fares are 10¢ for one zone and 20¢ for two zones for the special fare groups listed above.

C H A P T E R I

P L A N N I N G I S S U E S

The five main issues identified in last year's Short Range Transit Plan will continue to figure prominently in District planning considerations for the foreseeable future. These five issues are:

- o Future Demand
- o Adequate Capacity
- o Service Quality
- o Cost Effectiveness and Productivity
- o Program Delivery

Several other issues have gained new prominence over the past year, or have emerged because of new Federal requirements. These include:

- o System Extensions
- o Maintenance Requirements
- o Express Bus Effectiveness and Productivity
- o Energy Contingency Requirements

In the following sections of this chapter, each of these issues will be reexamined in terms of the latest available projections, assumptions, or related information. Based on this general discussion, the plan will focus in the next chapter on a detailed assessment of District functions by program area.

FUTURE DEMAND

Expectations regarding future ridership levels are perhaps the key consideration in transit short- and long-range planning. Additional emphasis is given to anticipated peak period riding as the determinant of maximum system capacity requirements. Route-by-route growth patterns will influence the distribution of available capacity, and underscore the need for capital improvements. Patronage projections affect staffing and other resource allocation, especially for vehicle maintenance and power requirements. Taken together with estimates of available financial assistance, annual ridership projections will also influence fare increase proposals. Future demand assessment is, therefore, the starting point in the SRTP process.

What is the outlook for growth of BART patronage during the upcoming planning period? A number of factors should be considered. The economic outlook, and especially the regional employment situation are especially important. Key competitive factors include gasoline prices, parking fees and availability, and highway capacity improvements. In addition, BART service quality, line-haul capacity, and accessibility influence the patronage growth.

As the economy recovered and the regional employment situation improved during the past year, so too did BART ridership growth. The conservative 3.7% annual growth rate, forecast for FY 1983/84 because of uncertainty about economic recovery, was exceeded. Weekday trips averaged 192,000 for October-December 1983 (not including a daily average of 11,500 BART/MUNI Fast Pass trips for which BART is not reimbursed a full 60¢ per trip). For the comparable period a year earlier, following the September 1982 fare increase, weekday trips averaged 181,400. Thus, after discounting the impact of new Fast Pass ridership, BART's latest annual growth rate exceeds 5.8%.

The relationship between regional employment levels and BART ridership is not surprising. According to the 1982 BART Passenger Profile Survey, approximately 70% of all passenger trips are to work or work related. Of the 200,000 BART weekday trips, about 140,000 are currently for this purpose.

Work related travel is likely to be a strong component of future BART ridership growth. According to the 1983 Latent Demand Survey, BART's potential market for work trips is about three times the current level, or more than 400,000 daily trips. The potential market includes only those people who live within 3 miles of a BART station, travel 5 miles or more to work, and work within 1/2 mile of a station (or have direct feeder bus access from their work site).

Anticipated regional employment growth is expected to include a sizable component in the central core areas of San Francisco and Oakland, as well as in outlying subcenters served by BART such as Concord and Walnut Creek. This employment expansion will continue to generate new BART riding, especially to those central areas where automobile parking and highway capacity are already saturated and no new highway improvements are scheduled. Given existing residential development patterns, it is reasonable to assume that regional travel patterns will not change significantly, and that increased commuting volumes caused by expanded CBD employment will flow through the corridors served by BART. Constraints on parking space expansion in the CBD areas and current high parking fees are expected to reinforce the trend toward transit.

Gasoline prices have decreased in real terms during the past year. Further decreases are possible but not expected to be significant. Despite this reduction, the rate of BART ridership growth actually increased. Therefore, it seems that decreases in the ridership growth rate are more likely to result from worsening employment conditions than from gasoline price reductions. If previous experience is repeated, gasoline price increases are expected to result in BART ridership gains.

BART can influence ridership growth by the quality of service it provides its customers. As BART's service reliability improved substantially following the October 1980 schedule revision, the impact of this improvement was reflected in growing ridership levels during 1981 and early 1982. Moreover, the previously expected seasonal dips in patronage were absent last year as average weekday trips showed a steady month-to-month increase. Apparently, new riders who tried the system were pleased with the service and joined the growing ranks of regular commuters. As long as BART service is perceived to be practical, economical, and reliable, a solid base of frequent users can be expected.

BART line-haul capacity and accessibility limitations may curtail ridership growth, although few real indicators exist by which to determine the extent and timing of this impact. Parking access has been constrained at most stations for several years. However, system usage has continued to increase, and there are no signs of a leveling off of growth at those stations where parking demand is greatest. Apparently, new riders evaluate the congestion and cost associated with alternative modes, and find a way to BART despite the lack of parking. This trend cannot be assumed to continue indefinitely. Parking and other access improvements should be pursued aggressively in order to sustain ridership growth.

Peak period train capacity limits are probably more likely than parking scarcity to curtail growth. This issue will be addressed in the next section of this chapter - in terms of steps that are necessary to increase line-haul capacity. At this point, it is worth noting recent data that may shed light on the relationship between capacity and patronage growth.

Data for the past 2-1/2 years suggest that BART riders may be defining acceptable loading limits for the system. In Table I-1, the ratios of riders to seated capacity, or load factors, are summarized on a quarterly basis by route. Information is shown for the P.M. peak period with separate figures for the peak 60 minutes and the balance of the peak train cycle (all available train capacity is utilized during the full peak train cycle which lasts approximately 2.5 hours). The load factors indicated measure demand to capacity in the peak direction at the maximum load point. Averages reflect typical conditions as sampled on representative weekdays. Throughout this document, references to load factors are to be interpreted in this context.

During the peak 60 minutes, load factors on the two most heavily travelled routes have averaged between 1.40 and 1.50. Peak hour trains on these routes averaged 10 cars and thus could not be lengthened. Load factors on the third busiest route have fluctuated more widely and train lengths have been increased in response to growing utilization. Note that on this route, the highest quarterly average load factor observed was 1.52.

During the balance of the peak cycle, lower load factors have generally been the case. For the most part, these load factors have not exceeded 1.25.

Data for the past 2-1/2 years seem to indicate that future growth may occur up to the point where load factors average 1.50 during the peak hour and 1.25 during the balance of the peak cycle. While higher average loadings do occur, it does not seem advisable to build patronage and thus revenue estimates on the expectation of continued patron tolerance of increased crowding.

Given these considerations, what future growth rates should be utilized for planning purposes? As noted above, average daily patronage increased at a 5.8% annual rate between October-December 1982 and 1983. Peak period, peak direction ridership grew by about 7.5% during the same interval. Over the past 9 years since transbay service began, daily patronage has increased at a 5.17% cumulative annual rate including the impact of three fare increases.

For the purposes of this plan update, it is assumed that ridership will grow by 5.3% annually during the planning period. This approximates the long-run historical rate, and is reasonably conservative for financial planning purposes. This is the expectation for "normal" growth which is assumed to occur provided peak load factor constraints are not exceeded. It is also anticipated that "extraordinary" growth will result from significant increases in capacity and reductions in headways. This concept will be discussed further below.

Detailed market share analysis on a segment by segment basis using 1980 Census journey-to-work data was programmed for this plan update. However, these data were not available in time for such analysis. Accordingly, until disaggregate projections can be made, the normal growth factor assumptions just noted will be applied uniformly for each route and daily time period.

Table III-1

ANNUAL PEAK LOAD POINT RIDERSHIP TO DATE AND PROJECTIONS FOR YEAR END,
ANNUAL CAR THROUGHPUT BY ROUTE AND RESULTING LOAD FACTORS

	Apr-Jun FY 81/82	Jul-Sep FY 82/83	Oct-Dec FY 82/83	Jan-Mar FY 83/84	Apr-Jun FY 83/84	Jul-Sep FY 83/84	Oct-Dec FY 83/84	Apr-Jun FY 83/84
PEAK HOUR RIDERSHIP								
Daily City/Concord	7,200	6,955	6,779	6,757	6,990	6,448	7,080	7,357
Daily City/Fremont	5,176	5,117	4,600	4,631	4,922	4,762	5,333	5,466
Daily City/Richmond	2,600	2,434	2,445	2,379	2,612	2,407	2,673	2,749
Transbay	15,068	14,506	13,864	13,797	14,524	13,697	15,006	15,372
Richmond/Fremont	1,482	1,482	1,482	1,482	1,482	1,482	1,482	1,482
Subtotal, Peak Load Points	16,713	16,176	15,482	15,569	16,047	15,254	16,429	17,359
PEAK HOUR CAR THROUGHPUT								
Daily City/Concord	68	69	70	68	70	68	69	70
Daily City/Fremont	47	48	45	46	44	45	48	50
Daily City/Richmond	24	25	27	28	27	29	30	27
Transbay	139	141	141	142	140	141	147	147
Richmond/Fremont	21	21	23	23	18	19	21	26
Subtotal, Peak Load Points	160	162	162	165	159	160	168	173
PEAK HOUR LOAD FACTORS								
Daily City/Concord	1.48	1.41	1.34	1.38	1.39	1.32	1.43	1.46
Daily City/Fremont	1.52	1.49	1.44	1.39	1.56	1.47	1.54	1.52
Daily City/Richmond	1.52	1.34	1.28	1.19	1.34	1.21	1.24	1.41
Transbay	1.50	1.42	1.36	1.35	1.44	1.35	1.43	1.47
Richmond/Fremont	1.14	1.12	1.11	1.11	1.15	1.12	1.15	0.95
Average, Peak Load Points	1.45	1.39	1.33	1.31	1.40	1.32	1.39	1.39
BALANCE OF PEAK RIDERSHIP								
Daily City/Concord	4,530	5,201	4,764	5,494	5,282	5,550	5,797	5,942
Daily City/Fremont	2,917	3,101	3,603	3,411	3,068	3,467	3,371	3,455
Daily City/Richmond	2,194	2,572	2,543	2,627	2,565	2,823	2,450	2,511
Transbay	9,649	10,874	10,910	11,532	10,915	11,040	11,618	11,909
Richmond/Fremont	1,734	1,463	1,432	1,432	1,592	1,496	1,466	1,632
Subtotal, Peak Load Points	11,303	12,337	12,342	12,664	12,507	13,336	13,084	13,540
BALANCE OF PEAK CAR THROUGHPUT								
Daily City/Concord	55	59	61	64	62	62	62	65
Daily City/Fremont	36	38	37	38	37	42	38	38
Daily City/Richmond	25	29	31	32	34	32	28	26
Transbay	119	126	133	135	133	136	128	129
Richmond/Fremont	25	22	20	16	21	20	19	19
Subtotal, Peak Load Points	143	148	156	150	154	156	147	148
BALANCE OF PEAK LOAD FACTORS								
Daily City/Concord	1.14	1.22	1.08	1.20	1.18	1.25	1.30	1.27
Daily City/Fremont	1.56	1.44	1.33	1.22	1.14	1.23	1.23	1.26
Daily City/Richmond	1.22	1.22	1.13	1.14	1.22	1.22	1.22	1.22
Transbay	1.13	1.20	1.19	1.19	1.21	1.21	1.26	1.28
Richmond/Fremont	0.98	0.92	0.98	1.00	1.05	1.03	1.07	1.19
Average, Peak Load Points	1.10	1.16	1.10	1.17	1.13	1.19	1.24	1.27

Based on extrapolations of current ridership patterns to the April-June 1984 quarter, the current normal growth demand estimates for the planning period are shown in Table I-2. Note that peak period, peak direction trips are shown separately. This will facilitate the discussion and analysis of future capacity requirements in the next section of this chapter. Note that by the end of FY 1988/89, normal average weekday ridership at current fare levels is expected to reach 269,000 trips.

ADEQUATE CAPACITY

In view of the likelihood of continued patronage growth, adequate capacity is the most pressing issue now facing BART. This factor will be especially acute during the next several years.

Expansion of BART capacity is the goal of the District's Capital Improvement Program which is now well underway. This program is essentially on the schedule contained in last year's Short Range Transit Plan. The current status of major project schedules is summarized in Figure I-1.

The C-car project will add 150 vehicles to the District fleet. The impact of the C-car delivery schedule on total fleet size during the planning period is indicated in Table I-3. Also shown are the District maintenance availability objectives and the numbers of vehicles rotated out for the Fire Hardening Program. The resulting available fleet is shown together with projected operational and mechanical spare requirements. The "bottom line" in Table I-3 is cars available for on-line service. Note that this figure is **not** identical to on-line requirements because not all A-cars can be utilized given headway limitations.

The BART Capacity Expansion Program developed in its current form in last year's Short Range Transit Plan is shown in Table I-4. The program is designed to reduce the minimum scheduled headway, thereby permitting more trains to be placed in service. Projects required to achieve or support each successive headway reduction are identified together with their respective completion dates.

After each necessary set of projects is complete, service expansion can take place. The proposed schedule for service expansion is shown in Table I-4. Each higher service level is characterized by the number of peak hour, peak direction Transbay trains, the total number of peak period trains and cars on-line, the spare car requirements, and the total cars required. Projected availability figures are shown for comparison purposes.

Current BART service is nearly at capacity in terms of effective use of available B-cars. Although additional A-cars are available, any new trains would require taking B-cars from already scheduled consists. This condition will persist throughout the vehicle fire hardening program until December 1985, as is shown in Table I-3. Completion of this program, and commencement of delivery of the new C-cars, will augment the fleet somewhat by mid-1986. But significant expansion of capacity will not be possible until mid-1987, when most of the new C-cars are delivered and available for service and when two key capacity expansion projects come on-line: Daly City Turnback and the new Integrated Control System (ICS).

Table I-2

NORMAL GROWTH, AVERAGE WEEKDAY RIDERSHIP PROJECTIONS AT CURRENT FARES -
(000's)

	AS OF FOURTH QUARTER OF FISCAL YEAR						
	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
Peak Period							
PM Peak Direction @							
PM Maximum Load Point:							
Peak 60 Minutes	17.4	18.3	19.2	20.3	21.3	22.5	23.7
Balance of Peak Cycle	13.5	14.3	15.0	15.8	16.6	17.5	18.4
Subtotal PM Peak	30.9	32.6	34.2	36.1	37.9	40.0	42.1
Total, Two Peak Periods	61.8	65.2	68.4	72.2	75.8	80.0	84.2
Non Peak Direction	40.1	42.3	45.0	47.2	50.0	52.4	55.2
Total Peak 4 Hours	101.9	107.5	113.4	119.4	125.8	132.4	139.4
Offpeak Period							
Normal Offpeak Patronage	93.6	98.8	104.2	109.7	115.6	121.7	128.2
Total Average Weekday							
Normal Growth Excluding Extra							
Fast Pass Trips	195.5	206.3	217.6	229.1	241.4	254.1	267.6
Extra Fast Pass Trips ¹	11.5	12.1	12.8	13.4	14.2	15.0	15.7
TOTAL	207.0	218.4	230.4	242.5	255.6	269.1	283.3

1. These trips are shown separately for revenue estimation purposes since BART is not reimbursed a full 60¢ per trip for this patronage according to the terms of the Fast Pass agreement.

Figure 1-1

MAJOR PROJECT SCHEDULES

1984 1985 1986 1987

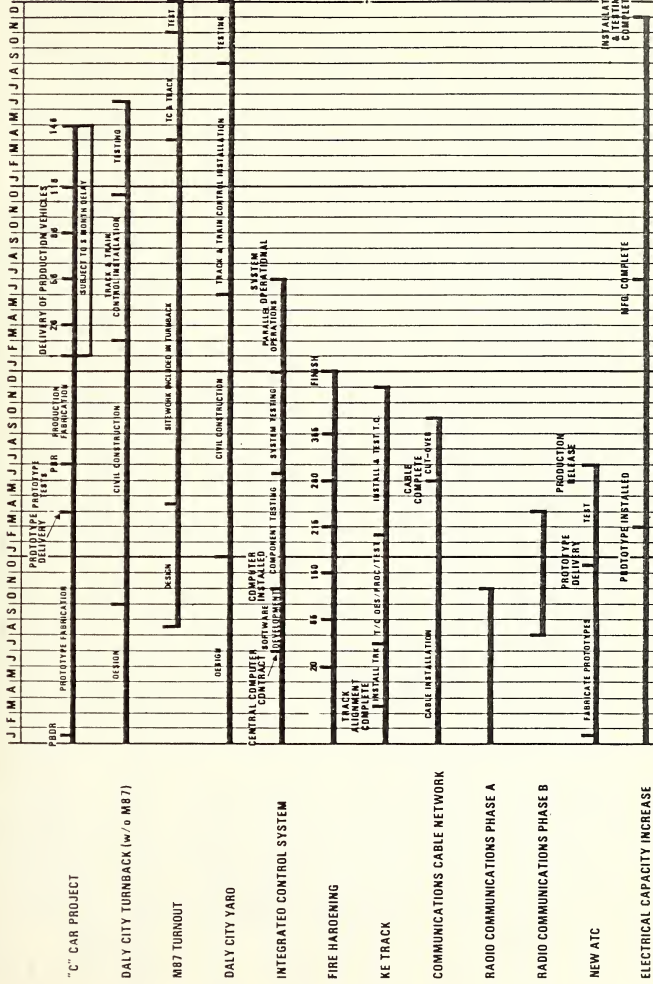


Table 1-3

SUMMARY OF FLEET AVAILABILITY AND
VEHICLES FOR PEAK PERIOD ON-LINE SERVICE

Total Fleet Size	FY 83/4		FY 84/5		FY 85/6				FY 86/7				FY 87/8		FY 88/9	
					Jul-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun					
A-Cars ^a	136		136		136	136	136	136	136	136	136	136	136	136	136	
B-Cars	303		303		303	303	303	303	303	303	303	303	303	303	303	
C-Cars ^b	0		0		0	0	26	56	86	116	146	150	150	150	150	
Total	439		439		439	439	465	495	525	555	585	589	589	589	589	
Vehicles Out for Fire Hardening ^c																
A-Cars	6		6		5	0	0	0	0	0	0	0	0	0	0	
B-Cars	15		14		11	0	0	0	0	0	0	0	0	0	0	
Total	21		20		16	0	0	0	0	0	0	0	0	0	0	
Operating Fleet																
A/C Cars	130		130		131	136	162	192	222	252	282	286	286	286	286	
B-Cars	288		289		292	303	303	303	303	303	303	303	303	303	303	
Total	418		419		423	439	465	495	525	555	585	589	589	589	589	
Maintenance Availability Objective																
A/C-Cars (# 85%)	110		111		111	115	137	163	188	214	239	243	243	243	243	
B-Cars (# 90%)	259		260		262	272	272	272	272	272	272	272	272	272	272	
Total	369		371		373	387	409	435	460	486	511	515	515	515	515	
Operational & Mechanical Spares																
A/C-Cars	16		16		16	16	16	16	16	16	16	14	14	14	14	
B/C-Cars	24		24		24	24	27	27	27	27	27	43	43	43	43	
Total	40		40		40	40	43	43	43	43	43	57	57	57	62	
Cars Available for On-Line Service																
A-Cars	95		95		95	99	99	99	99	99	99	101	101	101	101	
B-Cars	235		236		238	248	245	245	245	245	245	229	229	224	224	
C-Cars	0		0		0	0	22	48	73	99	124	128	128	128	128	
Total	330		331		333	347	366	392	417	443	468	458	458	453	453	

a. Not Including Engineering Test Vehicle.

b. Number of C-cars on hand at beginning of 3-month period indicated.

c. Also includes cars out awaiting repair for accident damage.

Figure 1-4

BART CAPACITY EXPANSION PROGRAM

Minimum Scheduled Headway	Projects Required to Achieve or Support This Headway	Project Completion Dates	Expanded Service Start Dates	Peak Hour Trains, Peak Direction Transbay	Peak Period Capacity On-Line Trains ^a	Spare Cars	Total Cars Required	Available Fleet A/C - Cars @ 85% B - Cars @ 90%	Operating Fleet Size
3' 45"	Current Service	---	Jul 1980	16	43 ^b	40 ^b	361	368 ^c	436
	Pending successful simulation & implementation of train control mods	Jun 1984	Fall 1984	17	45 ^b	40 ^b	367	371 ^d	439
	Fire Hardening (cars completed)	Dec 1985	Dec 1985	17	45 ^b	40 ^b	378	387	439
	Delivery of 32 C-cars	Mar 1986	Apr 1986	17	48 ^b	40 ^b	409	414	471
3' 10"	KE Track	Nov 1985							
	Fire Hardening (removal of vent separation)	Dec 1985							
	ICS	Jun 1986							
	Daily City Turnback	May 1987 ^e							
2' 30"	Delivery of 78 additional C-cars	Jan 1987	Jul 1987	19	53	408	465	480	549
	Daily City Yard	Dec 1987 ^e							
	New On-Board ATC	May 1987							
	Delivery of 40 additional C-cars (150 total)	Jun 1987							
2' 15"	Primary Detection Project; Wayside ATC Modifications	To Be Determined ^g							
	To be determined based on System Performance Study	Completion of SP'S, Jul 84	Jul 1988 ^h	24	62	437	499	514	589
	To be determined based on System Performance Study	Completion of SP'S, Jul 84	Jul 1989 ^h	26	74	452	514	514	589

a. Number of consists on-line; throughput equivalent to one extra train (on Richmond/Daily City Route).

b. One 7-car consist is scheduled for revenue service but is reserved as a spare when required (included in the "On-Line" column). This consist will be lengthened when the KE track becomes operational, and this consist can be laid up there.

c. Excluding 16 vehicles out for fire hardening and three damaged cars out awaiting repairs. Includes 7 more A-cars than can be put in service due to headway constraints limiting the total number of trains on-line.

d. Excluding 16 vehicles out for fire hardening; three damaged cars returned to service following completion of repairs.

e. Provided Letter of No Prejudice received by May 1984.

f. Includes FUC approval.

g. Depends on results and recommendations of Train Detection Study.

NORMAL GROWTH REQUIREMENTS

In the interim, will the additional available capacity be sufficient to accommodate projected normal growth of peak period, peak direction demand? How much of an increase in current capacity will be required to satisfy normal demand at the previously mentioned load factor guidelines of 1.5 for the peak hour and 1.25 for the balance of the peak cycle?

The **current** allocation of vehicles on-line is not sufficient to accommodate normal growth projected for the next five years within the suggested load factor guidelines. This is demonstrated in Table I-5. By the end of the planning period load factors would average over 1.90 on the two heaviest travelled routes during the peak hour, and over 1.70 on the same routes for the balance of the peak cycle.

Given the projected normal demand and the load factor guidelines, Table I-6 indicates how many cars would be required to serve peak hour ridership at a 1.5 load factor. In this analysis, projected demand by route is constrained if it exceeds total capacity as represented by current seat allocation factored by 1.5. Demand above the constrained amount is considered excess. The additional cars needed to accommodate this excess at a 1.5 load factor are also shown. Table I-7 presents the results of a similar analysis of demand projected for the balance of the peak cycle in terms of a 1.25 load factor.

During the peak hour, the two less heavily travelled routes will be able to absorb projected normal growth and relinquish some currently allocated vehicles by accepting the higher load factors now experienced by the two heavier travelled routes. This analysis is summarized for the peak hour in Table I-8. Note that for the Richmond/Daly City and Richmond/Fremont routes, car allocation based on uniform higher load factors should result in about 9 to 11 extra B-cars for new trains during FY 1984/85 and FY 1985/86. In contrast, a similar analysis of the current car allocation for the balance of the peak cycle (Table I-9) does not free up any additional vehicles based on the 1.25 load factor guideline. Tables I-8 and I-9 indicate the number of additional trains required on those routes where all existing consists are at the 10-car limit.

How do these estimates of cars required to serve normal growth compare with previously projected on-line vehicle capacity? As shown in Table I-10, the previously planned car allocation exceeds normal demand requirements by 22 to 35 vehicles between 1986 and 1989. (Note, however, that this figure drops to 12 in 1990. In other words, normal demand growth in that year requires some of the vehicles that would otherwise be available for extra service). These extra cars can be utilized for extraordinary service beyond that required by normal demand. This will be discussed below.

How many additional trains are required for normal demand? By the end of the current planning period (1989), it is projected that 6 more trains than are currently operated will be needed to serve normal growth (refer to Table I-11).

Table III-5
1984 SRTP PEAK LOAD POINT NORMAL DEMAND AND
LOAD FACTORS BASED ON CURRENT CAR ASSIGNMENT BY ROUTE
Projected as of Fourth Quarter (April-June) of Each Fiscal Year

	FY 83/84	FY 84/85	FY 85/86	FY 86/87	FY 87/88	FY 88/89	FY 89/90
NORMAL PEAK HOUR DEMAND							
Daly City/Concord	7,357	7,747	8,157	8,590	9,045	9,524	10,029
Daly City/Fremont	5,466	5,756	6,061	6,362	6,721	7,077	7,452
Daly City/Richmond	2,749	2,895	3,048	3,210	3,380	3,559	3,748
Transbay	15,572	16,398	17,257	18,182	19,146	20,160	21,229
Richmond/Fremont	1,787	1,881	1,981	2,086	2,197	2,313	2,436
Subtotal, Peak Load Points	17,359	18,279	19,248	20,258	21,342	22,473	23,664
CURRENTLY ASSIGNED CARS, PEAK HOUR							
Daly City/Concord	70	70	70	70	70	70	70
Daly City/Fremont	50	50	50	50	50	50	50
Daly City/Richmond	31	31	31	31	31	31	31
Transbay	151	151	151	151	151	151	151
Richmond/Fremont	24	24	24	24	24	24	24
Subtotal, Peak Load Points	175	175	175	175	175	175	175
AVERAGE PEAK HOUR LOAD FACTORS							
Daly City/Concord	1.46	1.54	1.62	1.70	1.79	1.89	1.99
Daly City/Fremont	1.52	1.60	1.68	1.77	1.87	1.97	2.07
Daly City/Richmond	1.23	1.30	1.37	1.44	1.51	1.59	1.68
Transbay	1.43	1.51	1.59	1.67	1.76	1.85	1.95
Richmond/Fremont	1.03	1.09	1.15	1.21	1.27	1.34	1.41
Average, Peak Load Points	1.38	1.45	1.53	1.61	1.69	1.78	1.88
NORMAL DEMAND, BALANCE OF PEAK							
Daly City/Concord	5,942	6,257	6,588	6,938	7,305	7,693	8,100
Daly City/Fremont	3,455	3,638	3,831	4,034	4,248	4,473	4,710
Daly City/Richmond	2,511	2,644	2,785	2,932	3,087	3,251	3,423
Transbay	11,909	12,540	13,204	13,904	14,641	15,417	16,234
Richmond/Fremont	1,632	1,718	1,809	1,905	2,006	2,113	2,225
Subtotal, Peak Load Points	13,540	14,258	15,014	15,809	16,647	17,530	18,459
CARS ASSIGNED, BALANCE OF PEAK PERIOD							
Daly City/Concord	64	64	64	64	64	64	64
Daly City/Fremont	39	39	39	39	39	39	39
Daly City/Richmond	28	28	28	28	28	28	28
Transbay	131	131	131	131	131	131	131
Richmond/Fremont	15	15	15	15	15	15	15
Subtotal, Peak Load Points	146	146	146	146	146	146	146
AVERAGE LOAD FACTORS, BALANCE							
Daly City/Concord	1.29	1.36	1.43	1.51	1.59	1.67	1.76
Daly City/Fremont	1.23	1.30	1.36	1.44	1.51	1.59	1.68
Daly City/Richmond	1.25	1.31	1.38	1.45	1.53	1.61	1.70
Transbay	1.26	1.33	1.40	1.47	1.55	1.63	1.72
Richmond/Fremont	1.51	1.59	1.68	1.76	1.86	1.96	2.06
Subtotal, Peak Load Points	1.29	1.36	1.43	1.50	1.58	1.67	1.76

Table I-6
1984 SRTP PEAK LOAD POINT DEMAND CONSTRAINED BY
CURRENT CAR ALLOCATION BY ROUTE AND 1.5 LOAD FACTOR
PM PEAK HOUR

	Projectd 4thQ/84	Projectd 4thQ/85	Projectd 4thQ/86	Projectd 4thQ/87	Projectd 4thQ/88	Projectd 4thQ/89	Projectd 4thQ/90
NORMAL DEMAND CONSTRAINED BY EXISTING CAPACITY @ 1.5 LOAD FACTOR							
Daly City/Concord	7,367	7,560	7,560	7,560	7,560	7,560	7,560
Daly City/Fremont	5,400	5,400	5,400	5,400	5,400	5,400	5,400
Daly City/Richmond	2,749	2,895	3,048	3,210	3,348	3,348	3,348
Transbay	15,506	15,855	16,008	16,170	16,308	16,308	16,308
Richmond/Fremont	1,787	1,881	1,981	2,086	2,197	2,313	2,436
Subtotal, Peak Load Points	17,293	17,736	17,989	18,256	18,505	18,621	18,744
DEMAND IN EXCESS OF 1.5 LOAD FACTOR							
Daly City/Concord	0	187	597	1,030	1,485	1,964	2,469
Daly City/Fremont	66	366	661	982	1,321	1,677	2,052
Daly City/Richmond	0	0	0	0	32	211	400
Transbay	66	543	1,259	2,012	2,838	3,852	4,921
Richmond/Fremont	0	0	0	0	0	0	0
Subtotal, Peak Load Points	66	543	1,259	2,012	2,838	3,852	4,921
CARS REQUIRED WITH BALANCED LOAD FACTORS FOR CONSTRAINED DEMAND							
Daly City/Concord	68	70	70	70	70	70	70
Daly City/Fremont	50	50	50	50	50	50	50
Daly City/Richmond	25	27	28	30	31	31	31
Transbay	144	147	148	150	151	151	151
Richmond/Fremont	17	17	18	19	20	21	23
Subtotal, Peak Load Points	160	164	167	169	171	172	174
CARS FOR EXCESS DEMAND							
Daly City/Concord	0	2	6	10	14	18	23
Daly City/Fremont	1	3	6	9	12	16	19
Daly City/Richmond	0	0	0	0	0	2	4
Richmond/Fremont	0	0	0	0	0	0	0
TOTAL CARS, BALANCED LOAD FACTORS							
Daly City/Concord	68	72	76	80	84	88	93
Daly City/Fremont	51	53	56	59	62	66	69
Daly City/Richmond	25	27	28	30	31	33	35
Transbay	144	152	160	168	177	187	197
Richmond/Fremont	17	17	18	19	20	21	23
Subtotal, Peak Load Points	161	169	178	188	198	208	219

Table I-7
1984 SRTP PEAK LOAD POINT DEMAND CONSTRAINED BY
CURRENT CAR ALLOCATION BY ROUTE AND 1.25 LOAD FACTOR
BALANCE OF PEAK CYCLE

	Projectd 4thQ/84	Projectd 4thQ/85	Projectd 4thQ/86	Projectd 4thQ/87	Projectd 4thQ/88	Projectd 4thQ/89	Projectd 4thQ/90
NORMAL DEMAND CONSTRAINED BY EXISTING CAPACITY @ 1.25 LOAD FACTOR							
Daly City/Concord	5,760	5,760	5,760	5,760	5,760	5,760	5,760
Daly City/Fremont	3,455	3,510	3,510	3,510	3,510	3,510	3,510
Daly City/Richmond	2,511	2,520	2,520	2,520	2,520	2,520	2,520
Transbay	11,727	11,790	11,790	11,790	11,790	11,790	11,790
Richmond/Fremont	1,350	1,350	1,350	1,350	1,350	1,350	1,350
Subtotal, Peak Load Points	13,077	13,140	13,140	13,140	13,140	13,140	13,140
DEMAND IN EXCESS OF 1.25 LOAD FACTOR							
Daly City/Concord	182	497	828	1,178	1,545	1,933	2,340
Daly City/Fremont	0	128	321	524	738	963	1,200
Daly City/Richmond	0	124	264	412	567	731	903
Transbay	182	750	1,414	2,114	2,851	3,627	4,444
Richmond/Fremont	282	368	459	555	656	763	875
Subtotal, Peak Load Points	464	1,118	1,874	2,669	3,507	4,389	5,319
CARS REQUIRED WITH BALANCED LOAD FACTORS FOR CONSTRAINED DEMAND							
Daly City/Concord	64	64	64	64	64	64	64
Daly City/Fremont	38	39	39	39	39	39	39
Daly City/Richmond	28	28	28	28	28	28	28
Transbay	130	131	131	131	131	131	131
Richmond/Fremont	15	15	15	15	15	15	15
Subtotal, Peak Load Points	145	146	146	146	146	146	146
CARS FOR EXCESS DEMAND							
Daly City/Concord	2	6	9	13	17	21	26
Daly City/Fremont	0	1	4	6	8	11	13
Daly City/Richmond	0	1	3	5	6	8	10
Richmond/Fremont	3	4	5	6	7	8	10
TOTAL CARS, BALANCED LOAD FACTORS							
Daly City/Concord	66	70	73	77	81	85	90
Daly City/Fremont	38	40	43	45	47	50	52
Daly City/Richmond	28	29	31	33	34	36	38
Transbay	132	139	147	154	163	171	180
Richmond/Fremont	18	19	20	21	22	23	25
Subtotal, Peak Load Points	150	158	167	176	185	195	206

Table I-8

EXTRA CARS AND TRAINS REQUIRED TO SERVE PROJECTED GROWTH: PEAK HOUR

	PROJECTED LEVELS AS OF FOURTH QUARTER OF FISCAL YEAR						
	1984	1985	1986	1987	1988	1989	1990
Concord/Daly City							
Existing Cars Required	68	70	70	70	70	70	70
Cars for Excess Demand	0	2	6	10	14	18	23
Subtotal Required	68	72	76	80	84	88	93
Existing Cars Assigned	70	70	70	70	70	70	70
Surplus	2						
Extra Trains Required		1	1	1	2	2	2
Fremont/Daly City							
Existing Cars Required=Assigned	50	50	50	50	50	50	50
Cars for Excess Demand	1	3	6	9	12	16	19
Subtotal Required	51	53	56	59	62	66	69
Extra Trains Required	1	1	1	1	2	2	2
Richmond/Daly City							
Existing Cars Required	25	27	18	30	31	31	31
Cars for Excess Demand	0	0	0	0	0	2	4
Subtotal Required	25	27	28	30	31	33	35
Existing Cars Assigned	31	31	31	31	31	31	31
Surplus	6	4	3	1			
Richmond/Fremont							
Existing Cars Required	17	17	18	19	20	21	23
Cars for Excess Demand	0	0	0	0	0	0	0
Subtotal Required	17	17	18	19	20	21	23
Existing Cars Assigned	24	24	24	24	24	24	24
Surplus	7	7	6	5	4	3	1
Subtotal, Peak Hour:							
Existing Cars Required	160	164	166	169	171	172	174
Cars for Excess Demand	1	5	12	19	26	36	46
Total Required	161	169	178	188	197	208	220
Existing Cars Assigned	175	175	175	175	175	175	175
Surplus	14	6	3				
Extra Trains Required	1	2	2	2	4	4	5

Table I-9

EXTRA CARS AND TRAINS REQUIRED TO SERVE PROJECTED NORMAL DEMAND GROWTH: -

BALANCE OF PEAK CYCLE

	PROJECTED LEVELS AS OF FOURTH QUARTER OF FISCAL YEAR						
	1984	1985	1986	1987	1988	1989	1990
Concord/Daly City							
Existing Cars Required	64	64	64	64	64	64	64
Cars for Excess Demand	2	6	9	13	17	21	26
Subtotal	66	70	73	77	81	85	90
Extra Trains Required			1	1	2	2	2
Fremont/Daly City							
Existing Cars Required=Assigned	38	39	39	39	39	39	39
Cars for Excess Demand	0	1	4	6	8	11	13
Subtotal	38	40	43	45	47	50	52
Richmond/Daly City							
Existing Cars Required	28	28	28	28	28	28	28
Cars for Excess Demand	0	1	3	4	5	8	10
Subtotal	28	29	31	33	34	36	38
Richmond/Fremont							
Existing Cars Required	15	15	15	15	15	15	15
Cars for Excess Demand	3	4	5	6	7	8	10
Subtotal	18	19	20	21	22	23	25
Subtotal, Balance of Peak Cycle:							
Existing Cars Required	145	146	146	146	146	146	146
Cars for Excess Demand	5	12	21	30	38	48	59
Total	150	158	167	176	184	194	205
Extra Trains Required			1	1	2	2	3

Table I-10
COMPARISON OF CURRENT NORMAL GROWTH CAR REQUIREMENTS
AND PREVIOUSLY PLANNED CAPACITY EXPANSION
(Revenue Vehicles, Not Including Spares)

	PROJECTED LEVELS AS OF FOURTH QUARTER OF FISCAL YEAR						
	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
CURRENT ESTIMATE							
Peak Hour							
Existing Cars Available	160	164	166	169	171	172	174
Cars for Excess Demand	1	5	12	19	26	36	46
Subtotal	161	169	178	188	197	208	220
Balance of Peak Cycle							
Existing Cars Available	145	146	146	146	146	146	146
Cars for Excess Demand	5	12	21	30	38	48	59
Subtotal	150	158	167	176	184	194	205
Peak Period							
Existing Cars Available	305	310	312	315	317	318	320
Cars for Excess Demand	6	17	33	49	64	84	105
Total	311	327	345	364	381	402	425
PREVIOUSLY PLANNED CAR ALLOCATION	321	327*	367	386	408	437	437
CARS AVAILABLE FOR EXPANDED OPERATION	10	0	22	22	27	35	12

*If current spares requirement is not increased.

Table I-11
COMPARISON OF CURRENT NORMAL GROWTH TRAIN REQUIREMENTS
AND PREVIOUSLY PLANNED CAPACITY EXPANSION
(Peak Period Trains On-Line)

	PROJECTED LEVELS AS OF FOURTH QUARTER OF FISCAL YEAR						
	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
CURRENT ESTIMATE							
Peak Hour							
Existing Service	21	21	21	21	21	21	21
Additional Trains Required	1	2	2	2	4	4	5
Subtotal	22	23	23	23	25	25	26
Balance of Peak Cycle							
Existing Service	22	22	22	22	22	22	22
Additional Trains Required			1	1	2	2	3
Subtotal	22	22	23	23	24	24	25
Peak Period							
Existing Service	43	43	43	43	43	43	43
Additional Trains Required	1	2	3	3	6	6	8
Total	44	45	46	46	49	49	51
PREVIOUSLY PLANNED TOTAL							
ADDITIONAL TRAINS	43	45	48	48	53	62	74
TRAINS AVAILABLE FOR EXPANDED OPERATION			2	2	4	13	23

Can these additional trains be accommodated by the previously planned build up of peak period service? For the most part, yes. Last year's plan contained a description of proposed peak period service in terms of headways and trains on-line by route. This is shown in Table I-12. As indicated above in Tables I-8, I-9, and I-11, additional trains will be necessary because projected normal growth vehicle requirements exceed the number which can be accommodated by existing consists given the 10-car limit. The additional trains are indicated in parentheses in Table I-12.

For peak period operations during FY 1984/85 through FY 1986/87, the previous plan called for one more peak hour Transbay train on the Fremont/Daly City route and 4 more trains in the balance of the peak cycle. The current analysis shows a need for two peak hour Transbay trains, one each on the Concord and Fremont/Daly City routes, and one additional train in the balance of the peak period. Strictly speaking, current projections show a need for one more peak hour train than can be accommodated by the planned service expansion.

Expansion of peak period service from 16 trains per hour to 17 (in each direction) will be possible pending the successful simulation and implementation of train control modifications near Daly City Station by mid-1984. This will allow trains to be turned back at Daly City station within a slightly shorter time interval, thus reducing the minimum scheduled headway from 3 minutes 45 seconds currently to 3 minutes 30 seconds. This will also result in an increase in the number of on-line trains from 43 currently to 45.

The completion of the vehicle fire hardening program in December 1985 will make available 5 additional A-cars and 11 B-cars. The B-cars will be used to provide additional capacity for the 45-train service plan, but system constraints during this timeframe preclude any further headway reductions and the scheduling of more on-line trains.

Given the anticipated 15-20 second reduction in the minimum headway during 1984 and no further improvements until 1987, only one additional peak hour Transbay train can be scheduled between mid 1984 and mid 1987. Two factors support adding the extra Transbay train on the Fremont/Daly City route. This route currently manifests the highest peak hour load factors. Likewise, time of travel preferences on this route are much more peaked than on the Concord/Daly City route. Greater work schedule variability on the latter route, has resulted in much more even train loadings throughout the peak period. For this reason, it is anticipated that the majority of normal growth requirements on the Concord/Daly City route can be satisfied by the addition of a train in the balance of the peak cycle, just outside the peak hour. Details of these two additional trains for FY 1984/85 will be discussed in Chapter II.

During the latter part of FY 1985/86, expansion of peak period service to 48 trains will be possible with receipt of the first 26 C-cars. Delivery of additional vehicles will continue during the year, allowing for additional capacity to be provided under the 48-train service plan.

Table I-12

DESCRIPTION OF PROPOSED PEAK PERIOD SERVICE FROM 1983 PLAN

Headways and Trains On-Line
(Current Estimate of Extra Trains Required for Normal Demand)

Headways (in Minutes)	FY 83/4	FY 84/5	FY 85/6	FY 86/7	FY 87/8	FY 88/9	Post FY 88/9 ^e
Minimum Sustainable	3.25	3.083 ^a	3.083	3.083	2.666 ^c	2.25 ^d	2.00 ^f
Minimum Scheduled	3.75	3.500 ^a	3.500	3.500	3.166 ^c	2.50 ^d	2.25 ^f
Basic Route	15.00	14.0/15.0	14.0/15.0	14.0/15.0	12.7/15.0	10.0/15.0	9.0/12.0
<u>Trains On-Line, By Route</u>							
Concord/Daily City							
Peak 60 Minutes	7	7 (1)	7 (1)	7 (1)	8 (2)	12 (2)	14 (3)
Balance of Peak	7	8	9 ^b (1)	9 (1)	10 (2)	13 (2)	17 (2)
Fremont/Daily City							
Peak 60 Minutes	5	6 (1)	6 (1)	6 (1)	6 (2)	6 (2)	7 (2)
Balance of Peak	5	5	6 ^b	6	7	7	8 (1)
Richmond/Daily City							
Peak 60 Minutes	4	4	4	4	5	6	6
Balance of Peak	5	5	5	5	5	6	8
Transbay							
Peak 60 Minutes	16	17 (2)	17 (2)	17 (2)	19 (4)	24 (4)	27 (5)
Balance of Peak	17	18	20 (1)	20 (1)	22 (2)	26 (2)	33 (3)
Richmond/Fremont							
Peak 60 Minutes	5	5	5	5	5	6	7
Balance of Peak	5	5	6 ^b	6	7	6	7
Total							
Peak 60 Minutes	21	22 (2)	22 (2)	22 (2)	24 (4)	30 (4)	34 (5)
Balance of Peak	22	23	26 (1)	26 (1)	29 (2)	32 (2)	40 (3)
Total	43	45 (2)	48 (3)	43 (3)	53 (6)	62 (6)	74 (8)

a. Anticipates completion of and capabilities provided by Selectonal Release at MB7.

b. Anticipates delivery of 26 C-cars.

c. Anticipates completion of and capability provided by KE track, Fire Hardening (removal of vent separation), Daily City Turnback, ICS, and delivery of 118 additional C-cars (150 total received).

d. Depends on capability provided by new on-board ATC, Wayside ATC modifications (removal of SORS), and improvements defined by System Performance Study.

e. Although beyond current 5-year planning period, post FY 88/9 service level represents maximum capacity produced by currently programmed system improvements.

f. Depends on further improvements defined by System Performance Study.

Several important capital improvements are expected to be in place which should support a reduction of the minimum scheduled headway from 3 minutes 30 seconds to 3 minutes 10 seconds by July 1987. These improvements include the KE track, removal of the currently imposed vent separation requirement (by the CPUC following vehicle fire hardening), the new integrated train control system, delivery of all 150 C-cars, and the Daly City turnback. Scheduled trains will increase to 53 on line, with a maximum hourly delivery of 19 trains per direction.

The previous plan called for the addition of one peak hour Transbay train on each of the Concord and Richmond/Daly City routes, and three trains during the balance of the peak in FY 1987/88. Current normal growth projections indicate a need for one peak hour train on both the Concord and Fremont/Daly City routes, and one additional train during the balance of the peak (See Table I-12). Enough Transbay slots exist for the two additional peak hour trains under 3 minute 10 second-headway operation. The resulting service frequencies would be somewhat different from current patterns.

Historically, BART scheduling philosophy has called for peak period route headways of no more than 15 minutes. Likewise, with few variations, headways on all routes have been the same for given times of day. Future reductions in the minimum headway could be translated into identically reduced route headways, or service improvements could be added as warranted by demand. If future service improvements are driven primarily by ridership growth, different headways may result at certain times on the various routes. Now that BART operates to a published timetable, this type of operation should be more acceptable to patrons. Acceptability could be further enhanced by coordinated feeder bus schedules.

Reduction of the minimum scheduled headway below 3 minutes 10 seconds and expansion of on-line trains above 53 will depend primarily upon the implementation of improvements to be identified by both the Primary Train Detection and System Performance Studies. Projects required will relate to achieving maximum system capacity, including improving the wayside automatic train control system (with the elimination or modification of SORS). Pending the outcome of these efforts, a preliminary estimate now calls for expanding service to 24 trains per hour per direction with 62 on-line trains by mid-1988, and a reduction of the minimum scheduled headway to 2 minutes 30 seconds.

The next service level anticipated after mid-1989 (also pending the outcome of the System Performance and Primary Train Detection Studies, and beyond this five-year planning period) is an increase from 62 to 74 trains on line. This is to be accomplished by decreasing the scheduled minimum headway from 2 minutes 30 seconds to 2 minutes 15 seconds for most of the peak period, with 3-minute minimum peak headways thereafter.

EXTRAORDINARY GROWTH REQUIREMENTS

After an allowance for normal growth train requirements, planned expansion of the number of trains on-line will make possible the provision of trains for extraordinary demand. This is indicated as follows in Table I-13.

Table I-13

TRAINS AVAILABLE FOR EXTRAORDINARY DEMAND

	<u>84/85</u>	<u>85/86</u>	<u>86/87</u>	<u>87/88</u>	<u>88/89</u>	<u>89/90</u>
Total Trains On-Line	45	48	48	53	62	74
Current Trains On-Line	43	43	43	43	43	43
Total Increase	2	5	5	10	19	31
Normal Growth Requirements	2	3	3	6	6	8
Extraordinary Demand	0	2	2	4	13	23

During FY 1985/86 and FY 1986/87, two trains can be put into service for extraordinary demand. The next year, two more trains can be added. Major increases of nine trains in FY 1988/89 and ten trains the following year should be possible provided the minimum sustainable headway can be reduced to 2 minutes 30 seconds by the end of the current plan period, and to 2 minutes 15 seconds thereafter.

The previous plan called for a symmetrical peak hour Transbay train scheduling sequence by route for each minimum headway level of service. That pattern was Concord, Fremont, Concord, Richmond. As indicated above in the discussion of normal demand requirements, some deviation from this pattern will be necessary to accommodate anticipated growth on the second most heavily travelled route (Fremont/Daly City).

Detailed market analyses have not been completed because of the delay in availability of 1980 Census Journey-to-Work data. For this reason, it is premature to speculate as to which routes would generate the most extraordinary demand, and thus warrant the extra trains. Until such market analyses are completed, allocation of the extraordinary demand trains to routes will follow the pattern identified previously as updated by the normal demand estimates in Table I-12.

It is anticipated, however, that most new service will be added to the Transbay routes. Detailed segment-to-segment trip data for the last four years show that the Transbay market is definitely the most dynamic (see Table I-14).

In view of the strong growth of Transbay demand, and the latent demand survey findings that suggest a commuter market potential of three times current levels, extraordinary demand is projected to fill available capacity as it is added. The revised average weekday patronage projection including the extraordinary demand is shown in Table I-15. Also indicated is the projected response to the District's expanded marketing program which is designed to increase offpeak and reverse commute ridership.

Table I-14

ANNUAL METRIC PERFORMANCE TRENDS, 1981-1983
QUARTERLY AVERAGE DOWD ON REPRESENTATIVE METRICS FOR EACH METRIC
LINE SEGMENTS AND MAJOR PORTFOLIOS

	1980				1981				1982				1983			
	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
Intra A-line	10,022	11,295	9,917	10,035	9,730	12,454	10,313	10,564	10,983	11,198	9,769	9,778	9,401	10,014	10,296	9,810
A-line/A-line	8,321	8,685	8,295	8,116	8,131	8,723	8,251	8,409	8,764	8,931	8,405	8,319	8,329	8,331	8,295	8,500
A-line/C-line	1,427	1,688	1,622	1,404	1,475	2,139	1,631	1,593	1,733	1,790	1,734	1,622	1,681	1,979	1,817	1,727
A-line/B-line	5,741	6,114	5,437	5,831	6,055	6,793	5,492	5,970	6,616	6,596	6,167	6,047	6,150	6,412	6,564	6,554
Intra K-line	670	756	600	572	636	630	623	669	671	660	591	536	592	595	550	591
K-line/C-line	4,904	5,164	4,918	4,909	4,787	5,048	4,938	5,000	5,395	5,732	5,044	5,117	5,167	5,181	4,918	5,163
K-line/B-line	4,859	5,402	5,098	5,300	5,916	6,022	5,951	6,050	6,787	7,035	6,299	6,221	6,406	6,179	6,169	6,413
Intra C-line	2,741	2,870	2,708	2,747	2,672	2,956	2,702	2,962	3,115	3,272	2,892	2,692	2,661	2,762	2,791	2,851
C-line/B-line	1,453	1,592	1,611	1,592	1,687	1,743	1,658	1,772	1,920	1,983	2,090	2,089	2,053	2,104	2,206	2,559
Intra R-line	4,410	4,476	4,100	4,694	5,072	4,940	4,402	5,087	5,534	5,528	4,889	4,935	5,039	4,969	4,893	5,257
A-line/M-line	19,689	22,351	22,624	23,100	23,678	26,102	26,443	26,922	27,767	27,886	28,469	27,995	27,733	28,403	28,681	30,255
K-line/M-line	12,122	13,371	13,937	14,213	14,995	16,092	16,638	17,191	17,881	18,539	19,268	18,951	19,382	19,217	19,337	20,271
C-line/M-line	25,883	26,328	26,068	27,099	27,182	31,169	31,568	33,196	33,322	33,785	33,945	33,661	33,274	33,215	33,774	35,443
R-line/M-line	6,204	7,839	10,879	10,471	11,825	12,930	15,170	14,423	15,316	15,918	17,395	16,092	16,499	16,302	17,731	17,900
Intra H-line	41,463	44,401	37,983	37,996	36,999	39,002	31,381	42,263	42,184	42,316	41,467	39,713	31,071	31,835	32,531	34,722
Fast Pass	0	0	0	0	0	0	0	0	0	0	0	0	0	13,152	15,431	17,946
Subtotal West Bay	41,463	44,401	37,983	37,996	36,999	39,002	31,381	42,263	42,184	42,316	41,467	39,713	31,071	44,996	47,964	52,227
Subtotal East Bay	44,547	48,092	44,115	45,219	46,161	51,498	46,036	48,235	51,476	52,703	47,973	47,338	47,555	48,456	49,495	49,495
Subtotal Trans Bay	63,938	69,889	74,741	74,833	77,680	85,294	89,819	91,729	94,346	96,048	99,048	96,599	96,867	97,631	99,526	103,869
SYSTEM TOTAL	149,948	162,462	156,746	157,993	160,840	175,753	175,222	182,231	188,016	191,067	188,478	183,561	183,293	191,000	195,975	205,541

Table I-15

AVERAGE WEEKDAY RIDERSHIP PROJECTIONS AT CURRENT FARES

INCLUDING RESPONSE TO MARKETING PROGRAM

AND EXTRA PEAK PERIOD SERVICE

(000's)

	AS OF FOURTH QUARTER OF FISCAL YEAR						
	1984	1985	1986	1987	1988	1989	1990
<u>Peak Period</u>							
PM Peak Direction @							
Maximum Load Point:							
o Normal Peak 60 Minutes	17.4	18.3	19.2	20.3	21.3	22.5	23.7
o Normal Balance of Peak Cycle	13.5	14.3	15.0	15.8	16.6	17.5	18.4
o Extraordinary Demand ¹		2.0	2.0	2.0	2.4	3.2	3.2 ²
Subtotal, PM Peak	30.9	32.6	36.2	38.1	40.3	43.2	45.3
Total, Two Peak Periods	61.8	65.2	72.4	76.2	80.6	86.4	90.6
Non Peak Direction	40.1	42.3	45.0	47.2	50.0	52.4	55.2
Total, Peak 4 Hours	101.9	107.5	117.4	123.4	130.6	138.8	145.8
<u>Offpeak Period</u>							
Normal Offpeak Patronage	93.6	98.8	104.2	109.7	115.6	121.7	128.2
Response to Marketing Program ³		3.0	5.2	6.6	8.1	9.7	10.2
Total, Offpeak	93.6	101.8	109.4	116.3	123.7	131.4	138.4
<u>Total Average Weekday</u>							
Excluding Extra Fass Pass Trip	195.5	209.3	226.8	239.7	254.3	270.2	284.2
Extra Fass Pass Trips	11.5	12.1	12.8	13.4	14.2	15.0	15.7
Total	207.0	221.4	239.6	253.1	268.5	285.2	299.9

1. Not including excess normal demand accomodated by peak period service increases.
2. Assumes additional 25 cars became available.
3. Objectives for response to marketing program as a percentage of normal offpeak ridership: FY 1984/85, 3%; FY 1985/86, 5%; FY 1986/87, 6%; FY 1987/88, 7%; FY 1988/89, 8%.

An updated description of proposed peak period service is shown in Table I-16, in terms of headways and trains on-line. A companion estimate of car allocation by route is contained in Table I-17.

Considerations for adequate capacity are clearly at the forefront of District planning concerns within the current SRTP timeframe, with the timely implementation of already programmed major capital improvements being essential. In view of current reliability performance and the projected strong future demand for BART service, provision of adequate capacity has emerged as the top priority facing the District in the coming years.

SERVICE QUALITY

Although provision of adequate capacity has become the District's top priority, this emphasis in BART policy does not mean that reliability can be taken for granted. Indeed, improved service quality is largely responsible for attracting and maintaining the addition to BART patronage experienced during recent years (see Table I-18 on page 27). Continued growth of BART ridership will depend heavily on the extent to which service quality can be maintained and improved. The issue of service quality addresses system performance and its impact on patronage. Research in this area of transit performance indicates that ridership tends to be more responsive towards changes in service quality than in fares. BART patronage growth since October 1980 supports this finding.

Because scheduling more trains on the system will alter the current operating environment, it will be essential to maintain system reliability while implementing capacity improvements. Work now underway as a part of the System Performance Study will contribute to the identification of achievable capacity and reliability objectives. This study is currently scheduled for completion by June 1984.

Many improvements have been completed to date under the Reliability Improvement Program. Results of this effort are best exemplified by increased on-time performance, improved car and train throughput, and reduced incident rates for both passenger offloads and AFC equipment.

Earlier improvements in operating dependability supported BART's decision in 1978 to publish a train schedule for both evening and weekend service. Daytime weekday train performance improvements as reflected by a 95% on-time record justified plans for publication of a similar schedule for weekday operations in April 1983. This timetable constitutes a more stringent basis for assessing service quality which will be available to all patrons and other interested persons. Maintenance of high quality service will be increasingly challenging, especially as BART commences its service expansion program in the latter two years of the current planning period.

COST EFFECTIVENESS AND PRODUCTIVITY

Cost effectiveness and productivity are integral to overall financial performance and the economies of providing expanded levels of service. Favorable performance in these, as well as for other areas, is directly dependent upon management's ability to formulate and implement effective programs which can keep pace with

Table 1-16

DESCRIPTION OF PROPOSED PEAK PERIOD SERVICE

Headways and Trains On-Line

Headways (In Minutes)	FY 83/4	FY 84/5	FY 85/6 Apr-Jun	FY 86/7	FY 87/8	FY 88/9	Post FY 88/9 ^e
Minimum Sustainable	3.25	3.083a	3.083	3.083	2.6667c	2.25d	2.00f
Minimum Scheduled	3.75	3.500a	3.500	3.500	3.1667c	2.50d	2.25f
Basic Route	15.00	14.0/15.0	14.0/15.0	14.0/15.0	12.7/15.0	10.0/15.0	9.0/12.0
<u>Trains On-Line, By Route</u>							
Concord/Daily City	7	7	7	7	8	11	14
Peak 60 Minutes	7	8	9 ^b	9	10	13	17
Balance of Peak							
Fremont/Daily City	5	6	6	6	7	7	7
Peak 60 Minutes	5	5	6 ^b	6	7	7	8
Balance of Peak							
Richmond/Daily City	4	4	4	4	4	6	6
Peak 60 Minutes	5	5	5	5	5	6	8
Balance of Peak							
Transbay	16	17	17	17	19	24	27
Peak 60 Minutes	17	18	20	20	22	26	33
Balance of Peak							
Richmond/Fremont	5	5	5	5	5	6	7
Peak 60 Minutes	5	5	6 ^b	6	7	6	7
Balance of Peak							
Total	21	22	22	22	24	30	34
Peak 60 Minutes	22	23	26	26	29	32	40
Balance of Peak	43	45	48	48	53	62	74
Total							

a. Anticipates completion of and capabilities provided by Selectional Release at MB7.

b. Anticipates delivery of 26 C-cars.

c. Anticipates completion of and capability provided by KE track, Fire Hardening (removal of vent separation), Daily City Turnback, ICS, and delivery of 118 additional C-cars (150 total received).

d. Depends on capability provided by new on-board ATC, Wayside ATC modifications (removal of SORS), and improvements defined by System Performance Study.

e. Although beyond current 5-year planning period, post FY 88/9 service level represents maximum capacity produced by currently programmed system improvements.

f. Depends on further improvements defined by System Performance Study.

Table 1-17

**SERVICE REQUIREMENTS AND PROJECTED CAR ALLOCATION BY ROUTE
BASED ON ANTICIPATED PM PEAK DEMAND, CAR AVAILABILITY, AND PROPOSED SERVICE EXPANSION^a**

	FY 83/4	FY 84/5 ^b	FY 85/6		FY 86/7 ^c	FY 87/8 ^d	FY 88/9 ^e
			Jul-Mar ^b	Apr-Jun ^c			
Concord/Daily City							
Peak 60 Minutes	68	70	70	70	70	80	90
Balance of Peak	66	70	73	83	90	90	99
Fremont/Daily City							
Peak 60 Minutes	50	55	60	60	60	70	70
Balance of Peak	38	40	42	46	50	50	50
Richmond/Daily City							
Peak 60 Minutes	25	27	27	30	32	33	44
Balance of Peak	28	29	29	31	35	35	36
Richmond/Fremont							
Peak 60 Minutes	17	17	18	20	23	24	25
Balance of Peak	18	19	19	26	26	36	23
Total On-Line							
A/G-Cars	86	90	90	96	96	106	124
B/G-Cars	224	237	248	270	290	313	313
Total	310 ^f	327 ^f	338 ^f	366 ^f	386 ^f	408	437
Spares							
A/G-Cars	16	16	16	16	16	14	14
B/G-Cars	24	24	24	27	27	43	48
Service Requirements							
A/G-Cars	102	106	106	112	112	120	138
B/G-Cars	248	261	272	297	317	345	361
Total	350	367	378	409	429	465	499
Available Fleet							
A/G-Cars	109	110	115	142	208	242	242
B/G-Cars	261	261	272	272	272	272	272
Total	370	371	387	414	480	514	514
Surplus (shortage)							
A/G-Cars	7	4	9	5	64	28	15
B/G-Cars	13	0	0	0	0	0	0
Total	20	4	9	5	64	28	15

a. As of fourth quarter of each fiscal year unless otherwise indicated.

b. Reflects 45-train service.

c. Reflects 48-train service.

d. Reflects 53-train service.

e. Reflects 62-train service.

f. Includes one 7-car train scheduled for revenue service but reserved as a spare consist when required.

Table I-18
OPERATING PERFORMANCE AND RELIABILITY COMPARISON

REVENUE SERVICE PARAMETERS	JULY 1976	JUL-SEP 1980 ¹	JUL-SEP 1982 ¹
Total Ridership	2,771,533	3,827,172	4,587,320
Number of trains scheduled during peak service hours	33	44	42
Car Availability at 8 AM (Percent)	61%	83%	88%
Percent of scheduled runs completed	90%	96%	99%
Percent of train runs "On Time"	46%	85%	94%
Revenue car hours	57,707	83,699	90,554
Total revenue & nonrevenue vehicle equipment failures (per 1,000 car-hours)	20.2	11.1	11.5
Vehicle equipment caused unscheduled train removals (per 1,000 car-hours)	5.4	2.6	1.4
Total offloads (per 1,000 car-hours)	2.4	1.6	1.2
Automatic fare collection incidents (per 1,000 passenger trips)	N/A	0.52	0.34
Percent of scheduled peak period, peak direction, Transbay throughput:			
Train:	N/A	N/A	98%
Cars:	N/A	N/A	97%
Farebox ratio	39% ²	45%	47%
Operating ratio	42% ²	51%	51%
Cars to maintenance/10,000 car-miles:			
BART average	N/A	2.0	2.3
Industry average	N/A	3.8	3.8
Annual miles per car:			
BART average	N/A	75,000	75,000
Industry average	N/A	50,000	50,000
Vehicle related maintenance headcount	425	360	360

1. Monthly average for 3-month period noted.

2. Ratios are for FY 1975/76.

inflation. Recent trends for District financial performance indicate that this has in fact occurred, where stringent budget controls and above forecast revenues, in large part due to better service, have produced better than anticipated results. In real terms, BART costs per passenger, per passenger mile and per vehicle mile have declined over the past five and one-half years, as shown by the constant dollar comparisons in Figures I-2 and I-3. At the same time, BART patronage and vehicle miles per equivalent employee have risen. This is solid evidence of BART productivity. Additional gains in the future will be harder to attain, thus management efforts should be focused on strategies to hold the line on expense, and to evaluate new ways of allocating resources.

Future operating budget considerations will be examined in detail below. However, several factors first need to be recognized in the general context of financial effectiveness.

Staffing costs comprise the largest component of total operating expense. While this may decline somewhat if electrical energy assumes a larger proportion, staffing cost is the one factor most directly under District control. Staffing levels materially affect labor cost, and to the extent that output can be increased without proportional increases in staffing, future labor cost increases can be held within the limits of available resources.

Secondly, although available information suggests that electrical energy cost increases may be less severe than previously anticipated, District efforts will need to focus on developing operating strategies which can lead towards reduced levels of power consumption (i.e., reduced car miles), consistent with stated load factor objectives.

Finally, the planned restructuring of the BART Express Bus service should be carried out as scheduled. This component of expense has increased excessively in the past two years, and its farebox ratio is well below the standard set for overall District operations.

On the funding side, increasing transit operator demands for regionally allocated discretionary funds are expected to severely limit BART's share of these resources. Additionally, capital funding limitations will require BART to continue to generate a portion of its capital funding requirements through operating sources in order to provide for essential system replacements and improvements. These limitations are expected to become more severe as competition for federal capital funds becomes more intense.

Continued pressure on the District's financial resources, due primarily to inflation and limited growth of funding sources, will further emphasize the need for efficient and effective operating strategies which incorporate innovative productivity measures into the overall approach. Further, key capital improvements which can enhance current operational efficiencies will need to be completed in order to realize long-term economies and increased productivity. Both the Daly City turnback/storage facility and the new C-cars will produce significant operational benefits and resulting cost savings. In the future, BART must exploit every possible operating efficiency in order to reduce cost pressures and minimize the impact of subsequent fare increases.

Figure 1-2

PATRONAGE AND COST COMPARISON

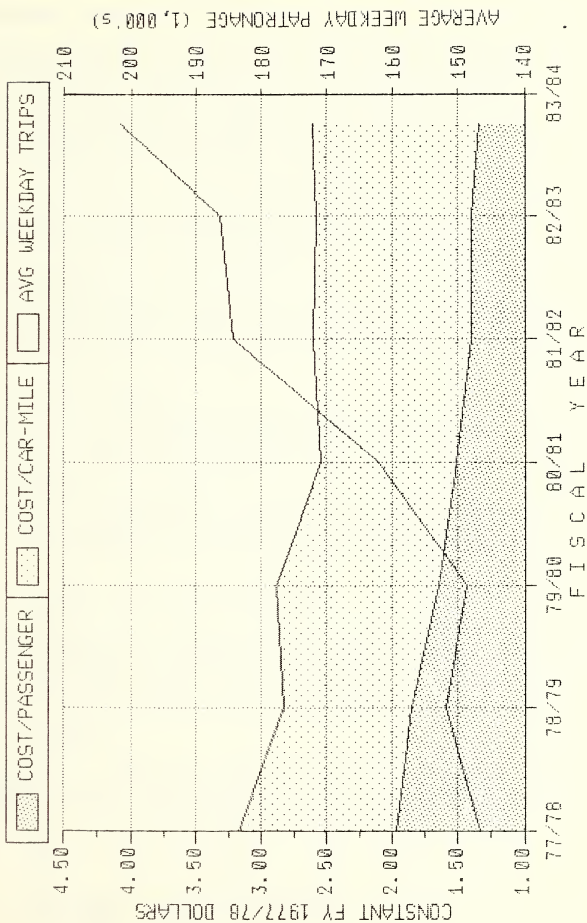
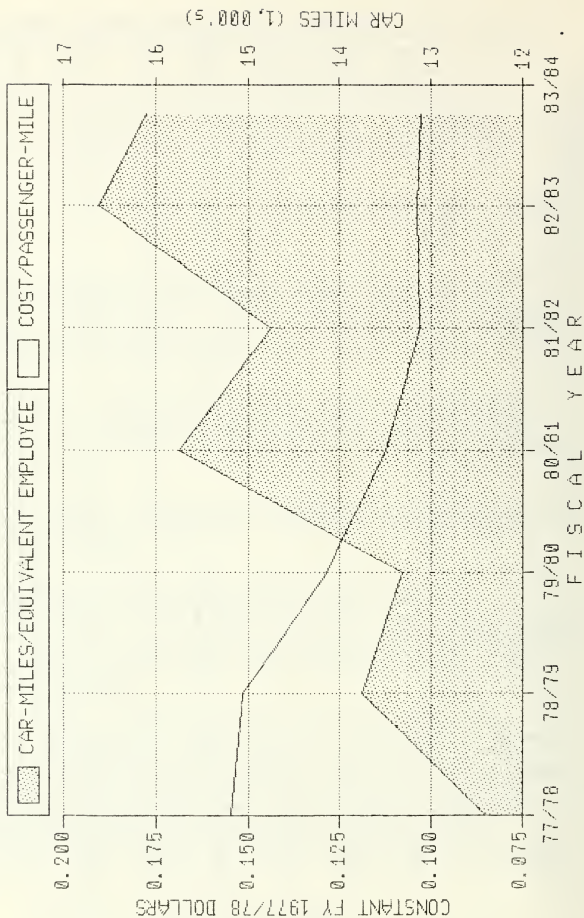


Figure 1-3

SERVICE OUTPUT & COST COMPARISON



PROGRAM DELIVERY

Realizing BART's inherent economies of scale and latent capacity potential by the end of this planning period is a realistic but challenging objective. Based on the projections noted above, it seems reasonable to expect significant growth in ridership if capacity increases can be delivered in a timely manner. These capacity increases depend heavily on implementation of the District's Capital Improvement Program. The principal elements of the capital program have been well established for several years and include:

KE Track

The third downtown Oakland track (KE track) is required to increase capacity through the heavily travelled Oakland wye, where all four routes merge.

Vehicle Fire Hardening

The currently imposed CPUC subway vent separation requirement effectively limits San Francisco line headways to 3 minutes 30 seconds, or 17 trains per hour. The removal of this restriction is contingent upon the timely completion of the vehicle fire-hardening program.

Central Train Control Computer

A new central train control computer will be required for operations exceeding the existing computer capacity limit of 49 on-line trains.

New Revenue Vehicles

At least 150 new revenue vehicles will be needed to service anticipated patronage growth. The new C-car will permit expansion of existing consists which are less than 10 cars long, addition of new trains, as well as efficient on-line sizing of trains.

New Vehicle Automatic Train Control System (ATC)

The existing ATC units on all A-cars are currently approaching the end of their useful lives. Additionally, they represent the largest single cause of service disrupting failures on the system. The New Vehicle ATC system will substantially reduce ATC caused system disrupting failures. This system will be installed in all C-cars and will also be retrofitted into all existing A-cars.

Primary Train Detection

Based on forthcoming recommendations of the System Performance Study, this project will address the removal or modification of SORS in order to achieve a 2 minute 15 second headway.

Daly City Turnback

Higher density train operations will require a more efficient and less time consuming train reversing facility at Daly City, where the minimum scheduled turnback time is now 3 minutes 45 seconds (versus a required minimum of 2 minutes 15 seconds).

Attainment of the increased capacity potential inherent in the BART system with the completion of these projects depends upon their joint implementation. Lacking one or more of these major components, the system will not be capable of performing at the required higher level of capacity. Estimated completion dates for these projects are highlighted in Figure I-1 above. The service expansion scenario described above depends completely on realization of these capacity enhancements as scheduled. Timely funding and effective project management are therefore essential to assure the delivery of these important capital improvements as scheduled. With appropriate qualification, the same kind of focus needs to be directed toward all significant District initiatives that either directly or indirectly affect the service provided to BART patrons.

EXTENSIONS

Extensions to the 71-mile basic system were thoroughly reviewed in the "New Starts and Extensions" hearings held by the Metropolitan Transportation Commission (MTC) in FY 1983/84 for the purpose of prioritizing these and other regional projects for future implementation. The resulting MTC New Starts and Extensions Program supports the four BART extensions which are in Phase I (Within Current Three-County District Priority) of the BART Extension Policy. The currently funded Alternatives Analysis/Draft Environmental Impact Statement for the North Concord BART extension is being initiated and similar efforts will be pursued for all remaining extensions supported in the MTC New Starts and Extensions Program.

Acquisition of purchasable extension station sites is in progress with the initial effort focusing on the complete acquisition of parcels in Phase I of the BART Extension Policy. Interim usage of these acquired future rail station sites is being coordinated with the District's planned improvements to the Express Bus program to provide freeway-oriented, park/ride lots for the Express Bus operations.

MAINTENANCE REQUIREMENTS

In late 1976, BART implemented a new Maintenance and Engineering philosophy from which a new Maintenance Plan evolved. Basically, for the three maintenance divisions within the department, Engineering sets the criteria, Maintenance performs the work using Engineering provided documents, and Inspection, at predetermined times, ensures that Maintenance is performing to Engineering criteria. There is no appeal beyond Engineering. This tried and proven philosophy is to remain in effect during the current planning period.

A description of District maintenance departments, personnel, facilities, and a summary of BART's maintenance program are included in Appendix I.

EXPRESS BUS EFFECTIVENES AND PRODUCTIVITY

Concern about the high cost, relatively low farebox recovery ratio, and less than desired operating characteristics of BART Express Bus Service has led to a major reevaluation of this program. Efforts to upgrade the program have begun with the drafting of a revised scope of services which will be the basis for an amended contract to take effect during FY 1984/85.

ENERGY CONTINGENCY REQUIREMENTS

In the event of a significant gasoline shortage which would potentially divert large numbers of automobile commuters to the system, BART will not be able to expand peak period service until the new revenue vehicles now on order are delivered. All available BART rail vehicles are currently in service. A few additional vehicles will become available when the fire hardening program is completed by the end of 1985.

In view of this inability to expand capacity during the first two years of the planning period, BART's response to a gasoline shortage will of necessity be comprised of the following types of activities:

- o Extension of peak period service beyond the current transition to offpeak service to accommodate commuters who can shift their normal working hours;
- o Provision of information about train loading patterns especially with reference to space available in non-peak directions for reverse commuting;
- o Consideration of higher peak period fares to shift non-essential trips to offpeak periods.

Each of these responses to a gasoline shortage condition could be implemented within a fairly short time interval. Energy contingency concerns are discussed further in Chapter II (see page II-29).

CHAPTER II

OPERATIONS AND CAPITAL

IMPROVEMENT PROGRAM

The preceding chapter outlined general considerations for this year's Short Range Transit Plan update. Future demand expectations were reassessed, highlighting the need for adequate capacity without compromising service quality. Important issues - including cost effectiveness, productivity, and program delivery were also identified. The purpose of this chapter is to review recent District performance and to examine the outlook for the future.

The following discussion is presented by program area: the nine areas of District activity which respond to the Board adopted goals (see page iii). Following general introductory remarks which highlight past performance, the discussion is divided into four major sections. These are:

FY 1983/84 Objective Status

A review of District performance for the first half of FY 1983/84 with respect to each of the Board adopted program area objectives.

Future Outlook

Based on an analysis of recent data and trends, an assessment of likely year-end performance is presented relative to each objective. Additional discussion focuses on likely performance beyond June 1984 and within the current 5-year planning horizon.

Planned Improvements

This section presents BART's strategy for assuring continued favorable performance. Specific projects and programs are highlighted in terms of future considerations.

Program Area Objectives

This fourth and final section identifies revised program area objectives for the upcoming 1984/85 fiscal year and also for the four remaining years in the current planning timeframe.

Additionally, Figure II-13 follows the program area discussion (beginning on page II-55) which summarizes all identified priority capital projects, their respective implementation schedules, and their program area impacts.

PROGRAM AREA A: PATRONAGE AND TRAVEL PROMOTION

As noted in Chapter I, the economic recovery of the past year and the improved regional employment situation led to higher BART ridership levels.

FY 1983/84 OBJECTIVE STATUS

Total ridership of 28,706,815 for the first 6 months of FY 1983/84 is 5.3% above a forecast of 27,256,400, and 6.8% above the 26,886,750 trips for the same period a year earlier. This year's figure includes 2,300,480 trips via the BART/MUNI Fast Pass which went into effect in April 1983. Approximately 34.3% of Fast Pass trips were formerly made on a regular BART ticket, and the remaining 65.7% are new to BART. (The latter trips do not earn BART a full 60¢ under the Fast Pass agreement.)

The FY 1983/84 patronage forecast assumed a 3.7% growth rate in view of the economic outlook at the time the forecast was made. The conservative 3.7% annual growth rate was exceeded during the past fiscal quarter. Weekday trips averaged 192,000 for October-December-1983 (not including a daily average of 11,500 BART/MUNI Fast Pass trips for which BART is not reimbursed a full 60¢ per trip). For the comparable period a year earlier, following the September 1982 fare increase, weekday trips averaged 181,200. Thus the latest actual annual growth rate exceeds 5.8%.

Numerous new patronage records were set during the period, as noted in Table II-1.

Table II-1	
CURRENT BART PATRONAGE RECORDS	
<u>HIGHEST DAYS</u>	
Monday, January 25, 1982	213,745
Tuesday, December 20, 1983	217,119*
Wednesday, December 7, 1983	214,126*
Thursday, December 15, 1983	212,628*
Friday, December 2, 1983	215,201*
Saturday, December 17, 1983	95,495*
Sunday, May 17, 1982	61,385
<u>HIGHEST MONTHLY WEEKDAY AVERAGE</u>	
November 1983	205,945*
<u>HIGHEST WEEKLY AVERAGE (Weekdays Only)</u>	
December 12-18, 1983	209,946*
<u>HIGHEST MONTHLY TOTAL TRIPS</u>	
August 1983	4,803,423
<u>HIGHEST 12-MONTH TOTAL TRIPS</u>	
January 1983 through December 1983	55,519,453*
* Record set during October-December 1983 quarter.	

Including the impact of new BART/MUNI Fast Pass trips (i.e., those trips formerly made on MUNI), average weekday patronage increased 12.2%, from 181,392 during October-December 1982 to 203,535 for the same period in 1983. Patronage for the 4-peak hours increased 13.9% between October-December 1982 and 1983, from 92,779 last year to 105,704 this year. Peak period ridership this fiscal year is currently 9.5% above a forecast of 93,563 trips per average weekday. Table II-2 on page II-3 summarizes representative average weekday station volumes for 1982 and 1983.

Table 11-2

STATION VOLUME COMPARISON FOR TYPICAL WEEKDAYS IN 1982 AND 1983

(Based on representative faregate exit data)

LINE & STATION	1982	1983	ADDITIONAL TRIPS	PERCENT CHANGE
SAN FRANCISCO				
Embarcadero	20,273	22,506*	2,233	11.0
Montgomery St.	22,116	24,003*	1,887	8.5
Powell St.	11,561	13,657*	2,096	18.1
Civic Center	9,501	11,573*	2,072	21.8
16th St.	2,855	4,033*	1,178	41.3
24th St.	4,129	5,297*	1,168	28.3
Glen Park	3,700	3,589*	(111)	(3.0)
Balboa Park	5,039	5,878*	839	16.7
Daly City	8,992	9,568	576	6.4
Subtotal	88,166	100,104*	11,938	13.5
OAKLAND CBD				
MacArthur	3,226	3,263	37	1.1
Rockridge	2,911	3,274	400	13.7
19th St.	6,995	7,148	153	2.2
12th St.	6,726	6,889	163	2.4
Lake Merritt	3,072	3,201	129	4.2
Oakland West	3,302	3,396	94	2.8
Subtotal	26,232	27,171	939	3.6
RICHMOND				
Ashby	2,214	2,269	55	2.5
Berkeley	8,196	8,222	26	3.2
North Berkeley	2,023	2,206	183	9.0
El Cerrito Plaza	2,625	2,880	255	9.7
El Cerrito Norte	4,151	4,179	28	0.7
Richmond	2,358	2,472	114	4.8
Subtotal	21,567	22,228	661	3.1
CONCORD				
Orinda	2,340	2,340	0	0
Lafayette	2,676	2,868	192	7.2
Walnut Creek	4,729	4,917	188	4.0
Pleasant Hill	5,023	5,085	62	1.2
Concord	6,801	6,806	5	0.1
Subtotal	21,569	22,016	447	2.1
FREMONT				
Fruitvale	4,293	4,424	131	3.1
Coliseum	2,990	3,507	517	17.3
San Leandro	3,047	3,341	294	9.6
Bay Fair	4,074	4,245	171	4.2
Hayward	4,530	4,420	(110)	(2.4)
South Hayward	2,389	2,613	224	9.4
Union City	3,351	3,222	(129)	(3.8)
Fremont	4,919	5,217	298	6.1
Subtotal	29,593	34,989	1,396	4.7
SYSTEM TOTAL	187,127	202,508	15,381	8.2

*Includes impact of BART/MUNI Fast Pass trips.

BART offpeak ridership on weekdays increased 10.4% from 88,613 during October-December 1982 to 97,831 for the same quarter in 1983, and is currently 3.3% above a year-to-date forecast of 94,292 trips. For Saturdays, year-to-year ridership for October-December increased 5.8%, from 72,750 to 76,983. Average Sunday ridership increased 7.3%, from 40,654 to 43,624. This compares to current year-to-date forecasts of 75,678 for Saturday and 45,224 for Sunday.

With the majority of peak period trains operating above a 1.30 load factor in the peak direction, offpeak and reverse commute travel continue to be the primary targets for BART promotional efforts. Activities during the July-December period were coordinated with major events held at San Francisco Moscone Center, the Oakland Coliseum, and both the Fox and Paramount Theaters in downtown Oakland. Special holiday activities which took place in downtown San Francisco and Oakland also served as focal points for promoting additional offpeak BART ridership. To accommodate travel to many of the events, longer than normally scheduled trains were provided. To further assist in promoting higher Sunday ridership, and to accommodate additional travel related to holiday shopping, BART operated Transbay service on the Fremont/Daly City and Richmond/Daly City routes on the four Sundays between Thanksgiving and Christmas. This service was provided in addition to regularly scheduled 2-route "X" service on the Concord/Daly City and Richmond/Fremont routes.

Based on July-December 1983 performance, it appears that BART will surpass the patronage forecasts for average weekday peak and offpeak, as well as those for Saturday, and Sunday. With Sunday ridership currently 2% below forecast, it appears that the + 3% offpeak objective for Sunday ridership will not be achieved. More Sunday events scheduled during the Spring, especially those held at the Oakland Coliseum, should assist in achieving the base forecast for average Sunday ridership. This gain, however, is not expected to be sufficient enough to realize an additional 3% above the base forecast.

In order to maximize offpeak and reverse commute system usage, BART will need to implement a more comprehensive and aggressive marketing program. Support for this should include the provision for maintaining standards for system cleanliness, public contact employees, courtesy and helpfulness, and train and station announcement accuracy.

FUTURE OUTLOOK

Given the considerations identified in Chapter I, what future growth rates should be utilized for planning purposes? As noted above, average daily patronage increased at a 5.8% annual rate over the October-December quarter of 1982. Peak period, peak direction ridership grew by about 7.5% during the same interval. Over the past 9 years since Transbay service began, daily patronage has increased at a 5.17% cumulative annual rate including the impact of three fare increases.

For the purposes of this plan update, it is assumed that ridership will grow by 5.2% annually during the planning period. This approximates the long-run historical rate, and is reasonably conservative for financial planning purposes. This is the expectation for "normal" growth which is assumed to occur provided peak load factor constraints are not exceeded. The patronage forecast based on this assumption is summarized in Table I-15. These estimates include normal growth, extraordinary peak period increases due to service expansion, and the increased ridership response to the District's marketing program.

PLANNED IMPROVEMENTS

The realization of BART demand forecasts is greatly dependent upon the District's ability to provide an acceptable quantity and quality of service at a given fare level. Within its 11-year operating history, the District has made very substantial improvements in both service capacity and quality while minimizing the impacts of required fare increases. And, as patronage records reveal, public response has been very favorable with sharp increases in ridership occurring with each major service improvement.

As highway congestion continues to increase and automobile operating costs rise, demand for BART service will expand. To maintain high quality service under these conditions will require the timely implementation of essential capital improvements identified in this plan.

Until substantial increases can be provided for peak period capacity in the primary demand direction, promotional efforts will continue to focus on attracting additional offpeak and reverse commute ridership. Strategies will build upon the information base established by the Passenger Profile and Latent Demand Surveys. Efforts in the area of patronage and travel promotion will subsequently focus on realizing demand forecasts through programmed service improvements and effective marketing strategies. This includes the introduction of additional inter-operator passes, improved system signage and transit information, and innovative ways to improve transfers between BART and other transit systems. Additionally, train and station area cleanliness, public contact employee helpfulness and courtesy, and service announcement accuracy will be continually monitored to assure acceptable performance is also being achieved.

In preparation for developing and implementing a more comprehensive marketing program during 1984/85, BART will conduct a marketing audit during the second half of 1984. This assessment will identify current marketing deficiencies and potential strategies for implementation prior to and during the upcoming fiscal year. An outgrowth of this effort will be the identification of an interim marketing program to be carried out in advance of the comprehensive program.

Capital projects which are in support of achieving increased ridership, and realizing a greater portion of BART's potential, are identified in Figure II-13 beginning on page II-55.

PROGRAM AREA OBJECTIVES

Revised operating performance objectives for this program are identified in Figure II-1 below.

Figure II-1

PATRONAGE AND TRAVEL PROMOTION PERFORMANCE OBJECTIVES

FY 1984/85

1. At a minimum, achieve normal growth projections for average daily patronage as follows (in 1,000's):

	<u>Jul-Sep</u>	<u>Oct-Dec</u>	<u>Jan-Mar</u>	<u>Apr-Jun</u>	<u>FY 1984/85</u>
Average Weekday:	207.3	213.8	213.8	218.4	213.3
4-hour Peak:	102.1	104.6	105.8	107.5	105.0
Offpeak:	105.2	109.2	108.0	110.9	108.3
Saturday:	85.3	81.3	86.9	90.7	86.1
Sunday:	48.6	46.6	51.2	52.8	49.8

2. In addition to the above, actively promote offpeak ridership to achieve a 3% increase in travel as follows (1,000's):

	<u>Jul-Sep</u>	<u>Oct-Dec</u>	<u>Jan-Mar</u>	<u>Apr-Jun</u>	<u>FY 1984/85</u>
Weekday:	2.8	2.9	2.9	3.0	2.9
Saturday:	2.4	2.3	2.5	2.6	2.4
Sunday:	1.4	1.3	1.5	1.5	1.4

3. Continue sampling procedure to evaluate train and station area cleanliness, and maintain train and station cleanliness at or above an evaluation rating of 90%.
4. Continue concern for customer relations among public contact personnel such that the rate of patron complaints about this issue remains below 8.75 per million trips.
5. Continue public announcement procedures and practices such that the rating for four categories of announcements in the Passenger Services Sampling Survey averages at least 95%.

FY 1985/86 to FY 1988/89

1. Maintain acceptable quality of service as reflected by accuracy of service announcements, employee helpfulness, and station cleanliness in support of achieving the following patronage levels at current fares as of the fourth quarter of each fiscal year (in 000's).

	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Average Weekday:	239.6	253.1	268.5	285.2
4-hour Peak:	123.8	130.1	137.7	146.3
Offpeak:	115.8	123.0	130.8	138.9
Saturday:	90.8	95.6	100.7	106.1
Sunday:	52.5	55.4	58.2	61.4

PROGRAM AREA B: BASIC SYSTEM SERVICE AND CAPACITY

Provision of adequate capacity is at the forefront of District planning concerns, given the strong current and projected increases in demand. The last major capacity addition was introduced with the phasing of close headways service during the summer of 1980, from 3- to 4-route Transbay service (with the addition of the Richmond/Daly City route). This improvement increased peak period on-line trains from 33 to 42, and on-line cars from 272 to 310. While scheduled peak hour Transbay capacity is 55.2% greater today, the growth in demand since 1980 kept peak hour train load factors virtually unchanged (1.40 then versus 1.36 presently). And with all available B-cars currently being used, higher load factors and constrained ridership levels are clearly in BART's future until additional capacity can be provided.

FY 1983/84 OBJECTIVE STATUS

As summarized in Table II-3 on page II-8, weekday service now calls for 43 on-line trains during peak periods, 39 for midday operations, and 14 for 2-route night service. Similarly, scheduled weekend service remains unchanged this year with 31 on-line trains required for Saturday daytime service and 14 on-line trains for Saturday night and all day Sunday service.

As of December 1983, BART's operating fleet consisted of 133 A's and 293 B's. Four a.m. pre-peak car availability averaged 108 A-cars and 265 B-cars for the July-December 6-month period (versus 102 and 259 A- and B-car availability objectives for the same period). This actual availability compares to service requirements (for afternoon peak period operations during December) of 102 A-cars and 259 B-cars and represents 77% and 88% of the operating A- and B-car fleet, respectively.

Actual peak period Transbay capacity averaged 98.7% of scheduled trains and 97.1% of scheduled cars. This is above the 98.0% objective for train throughput, but just below the 97.5% throughput objective for cars.

Based on representative data, systemwide load factors for the first half of FY 1983/84 averaged 1.36 for peak hour operations, 1.21 for the balance of the peak period, and 0.79 for offpeak service (versus an objective which calls for all maximum offpeak train load factors to average no greater than 1.05). These load factor averages, however, do not reveal the rather wide range of values recorded for individual routes. Peak hour load factors ranged from a high of 1.55 on the Fremont/Daly City route to a low of 1.17 on the Richmond/Fremont route, and individual train load factors were even higher. The current District objective for peak period operations calls for balancing load factors for discretionary trains (consists which can be lengthened or shortened within the 3- to 10-car limitation). On this basis, peak period load factors for the July-December period averaged 1.22 for Fremont/Daly City, 1.21 for Concord/Daly City, 1.18 for Richmond/Daly City, and 1.10 for Fremont/Richmond. The discretionary train load factor objective was attained since any shifting of cars off the Fremont/Richmond route would have resulted in excessively high load factors on the resulting shorter trains. The offpeak objective was not totally achieved as offpeak load factors on two trains exceeded the 1.05 target during the October-December 1983 quarter.

FUTURE OUTLOOK

Based on data for the first half of FY 1983/84, it is anticipated that all of the objectives for this program area will be achieved by year's end. While this is a positive indication, the longer term outlook is for continued ridership growth beyond the District's ability to provide adequate capacity. This situation was underscored in Chapter I.

Table II-3

SCHEDULED SYSTEM CAPACITY (As of December 1983)

	C O M M U T E				W E E K D A Y		SATURDAY ^a		SUNDAY/HOLIDAY	
	AM PEAK	MIDDAY	PM PEAK	NIGHT ^a		DAY	NIGHT	DAY	NIGHT	
NUMBER OF TRAINS										
Concord/Daly City	14	10	14	7		8	7	7	7	
Fremont/Daly City	10	10	10	b		8	b	b	b	
Richmond/Daly City	9	9	9	b		7	b	b	b	
Fremont/Richmond	10	10	10	7		8	7	7	7	
Total On-Line	43	39	43	14		31	14	14	14	
Spares	8	7	8	7		c	c	c	c	
Total Required	51	46	51	21		c	c	c	c	
NUMBER OF A-CARS										
Concord/Daly City	28	20	28	14		16	14	14	14	
Fremont/Daly City	20	20	20	b		16	b	b	b	
Richmond/Daly City	18	18	18	b		14	b	b	b	
Fremont/Richmond	20	20	20	14		16	14	14	14	
Total On-Line	86	78	86	28		62	28	28	28	
Spares	16	14	16	14		c	c	c	c	
Total Required	102	92	102	42		c	c	c	c	
NUMBER OF B-CARS										
Concord/Daly City	105	21	106	31		21	14	36	9	
Fremont/Daly City	68	15	68	b		27	b	b	b	
Richmond/Daly City	42	13	41	b		14	b	b	b	
Fremont/Richmond	20	10	20	8		8	7	7	8	
Total On-Line	235	59	235	39		70	21	43	17	
Spares	24	8	24	12		c	c	c	c	
Total Required	259	67	259	51		c	c	c	c	

a. Base service requirement without consideration of major special events which may require additional capacity.

b. No service on these routes during these times.

c. Spare requirements are a yard option for weekend service.
A minimum of one train per yard is kept as a ready spare.

Current patronage has placed a premium on peak hour capacity, particularly on the Concord and Fremont/Daly City lines where all scheduled peak hour trains are already at their maximum 10-car limit. In the short term, lesser crowding presents an opportunity to reallocate some B-cars from the two less travelled routes: Richmond/Fremont and Richmond/Daly City. However, this action will result in increased load factors on these routes to levels approximately equal to those on the Concord and Fremont/Daly City routes. In the longer term, reduced crowding on the Concord and Fremont/Daly City routes (and the ability to accommodate higher patronage at desired load factors) will require additional peak hour capacity which can only be provided by additional cars and an increase in the number of on-line trains. The system is effectively functioning at maximum service levels presently, with no major capacity additions possible as a result of the following critical factors:

Terminal/Turnback Zone Configuration and Approach Speeds

With the exception of the Richmond terminal zone, those located at Concord, Fremont, and Daly City require trains to cross in front of one another in negotiating inbound and outbound movements. This, together with excessively slow speeds (as low as 3 miles per hour), increases the time required for reversing trains at the ends of each line. This situation is most critical at Daly City since this is the turnback point for the of three Transbay routes and therefore reflects the highest service frequency on the system. The current schedule requires that 16 trains per hour be reversed at Daly City, resulting in a 3 minute 45 second-headway. Short of constructing a new turnback facility, train control modifications for the existing track in the vicinity of Daly City could allow for a 3 minute 30 second-headway, which would permit scheduling one additional train in the peak hour. To reduce headways further will require a more efficient track configuration and signal protection to allow for improved train reversing.

Additional Cars and Storage

Even if BART could operate at closer headways, the current car inventory of 136 A's and 303 B's would not permit scheduling additional capacity. The vehicle fire-hardening program (see Program Area F: Safety and Security, on page II-38) will remove 5 A's and 11 B's until this project is completed in December 1985. This means the District will have a maximum of 109 A-cars and 261 B-cars to form on line and ready spare trains (under current headway capabilities, however, only 102 A's can be used). This is only 2 B-cars more than are currently used for peak period service. Clearly, additional cars will be required, both to lengthen currently scheduled trains where possible and also to make up additional trains once headways can be reduced. The acquisition of new vehicles substantially in excess of the current fleet will require additional storage space. An important consideration which will need to be addressed is the determination of existing storage facility limitations and identification of any new facilities which will be required with fleet expansion. Similar considerations need to be given to maintenance of vehicles.

Central Train Control Computer

BART's existing train control computer is limited to supervising a maximum of 49 on-line trains and is approaching its useful life. With current operations requiring a maximum of 43 on-line trains, a new system capable of handling substantially more traffic will be required.

A-Car Automatic Train Control System (ATC)

The ATC units on all of BART's A-cars are approaching the end of their useful lives. These units will need to be replaced to allow for the phasing in of higher frequency train operations while maintaining service reliability.

Route Merging and Mainline Capacity

The Oakland Wye is a critical merging zone on the system, where all four routes share common trackage. The potential delay impact for trains stalled within the wye subsequently can be severe and can affect operations on the entire system. The KE track will provide additional capacity and operational flexibility when completed in July 1985. A major concern, however, is the two-way operation of the new third track, with regard to safety restrictions and current computer capabilities relating to reverse tracking and fleeting of trains.

Primary Train Detection

Uncertainty prior to the beginning of BART service about the primary train detection system's ability to recognize continuously all online trains led to the CPUC requirement for backup detection systems. The Computer Assisted Block System (CABS) was used initially. This was replaced by the backup system currently in effect, Sequential Occupancy Release System (SORS), which provides adequate detection but compromises the ability to operate trains on headways less than 3 minutes 30 seconds. To achieve shorter headways, the primary train detection system must be tested and analyzed, with any required modifications made in order to obtain CPUC certification.

Removal of Subway Vent Separation Requirement

As a result of the January 1979 Transbay tube fire and subsequent investigation, BART is restricted to operating no more than one train between any two subway air vents. This is a precautionary measure imposed to minimize the risk of smoke from a burning train being drawn past other trains. The removal of this restriction is dependent upon completion of the vehicle fire-hardening program and critical life safety wayside improvements, and ultimately, approval from the California Public Utilities Commission (CPUC).

PLANNED IMPROVEMENTS

A description of proposed peak period service for the next five years is presented on page I-25, with peak period service defined by the number of trains on line by route and resulting headways in minutes. Current peak period service is shown as 43 on-line trains. This essentially represents the maximum level of peak period capacity which can be provided between now and mid 1986 when the phased delivery of the new C-cars begins to have a significant impact on the size of BART's vehicle fleet.

This conclusion is underscored by the information shown on page I-8 which indicates the projected operating fleet requirements of the fire hardening project and the resulting available fleet. With one exception, the net result in terms of available B's will be to maintain the current level of capacity through June 1985. Obviously, this will have a bearing on system load factors given the foregoing demand projections.

The exception noted above, refers to a minor reallocation of B-cars from the more lightly travelled Richmond/Fremont and Richmond/Daly City routes to the Concord and Fremont/Daly City routes. Analysis indicates that 9 to 11 B-cars can be made available by accepting higher load factors on the two less crowded routes. These B-cars, in conjunction with available A's, can then be used to form 2 new peak period trains, providing some relief to the more crowded Concord and Fremont/Daly City routes. The net effect of this reallocation will be to equalize the individual route

load factors more than they are currently, and to provide some additional capacity until the phased receipt of the new C-cars begins to have an impact on service starting in mid 1986, and then again as headways are reduced to 3 minutes 10 seconds in mid 1987. This reallocation is scheduled to take place during the Fall of 1984 which, along with the planned completion of train control modifications in the vicinity of Daly City Station (to allow for a reduction of the minimum scheduled headway from 3 minutes 45 seconds to 3 minutes 30 seconds), will allow for the addition of one peak hour train and a second new train added during the balance of the peak period. As a result of Fremont/Daly City having the highest average load factor during the peak hours, one train during this time period is to be added on this route. The second new train will be added to Concord/Daly City service just outside the peak hour, by extending the 7 minute 30 second-route headway into the balance of the peak period.

The next significant addition of on-line capacity is scheduled to occur during the first half of 1986, when expansion of peak period service to 48 trains will be possible with the receipt of 26 C-cars by March 1986 and delivery of additional vehicles during the year. The minimum scheduled headway will be maintained at 3 minutes 30 seconds.

Several important capital improvements are expected to be in place which should support a further reduction of the minimum scheduled headway to 3 minutes 10 seconds after the turnback portion of the Daly City project is completed by August 1986. These include the KE track, vehicle fire hardening, central train control computer enhancement, and the delivery of the balance of the new revenue vehicles.

Completion of the new on-board ATC units and other improvements to be identified by both the Primary Train Detection and System Performance Studies, are expected to result in a further reduction of the minimum scheduled headway to 2 minutes 30 seconds and resulting expansion of on-line trains to 62. While preliminary estimates point to the mid-1988 start of this service, the outcome of the Primary Train Detection and System Performance Studies will actually determine when this service can be implemented.

The next service level anticipated after mid 1988 (also pending the outcome of the Primary Train Detection and System Performance Studies and beyond this five-year planning period) is an increase from 62 to 74 trains on line, with a decrease in the scheduled minimum headway from 2 minutes 30 seconds to 2 minutes 15 seconds.

In order to implement the proposed service expansion scenario, several major projects must be completed. District efforts will, therefore, continue to focus on the timely implementation of already programmed essential capital projects, which when completed, will permit a substantial expansion of BART capacity as outlined above. In summary, these essential projects are:

New C-Cars

The analysis of BART capacity requirements on pages I-5 through I-24 indicates that additional vehicles are vitally necessary to meet projected ridership growth during the five-year planning period. As indicated, peak period service and capacity cannot be significantly expanded until receipt of the new C-cars. To maintain maximum capacity, 85% A-car and 90% B-car availability will be required along with train and car throughput of 98.0% and 97.5%, respectively. Without the new C-cars, forecast patronage, if attained, will exceed system capacity, with load factors well above desired standards.

New Vehicle Automatic Train Control System (ATC)

The existing ATC units on all A-cars are currently approaching the end of their useful lives. Additionally, they represent the largest single cause of service disrupting failures on the system. The New Vehicle ATC system will substantially reduce ATC hardware failures, and through the use of built-in operational redundancy, reduce ATC-caused system-disrupting failures by a factor of 25 to 1. This system will be installed in all new C-cars, and will also be retrofitted into all existing A-cars.

Daly City Turnback/Storage Facility

Once currently scheduled consists reach the 10-car limitation, more on-line trains will be required to increase capacity. This need already exists on the Concord and Fremont/Daly City lines during peak hours with maximum available capacity essentially being provided and load factors continuing to increase as a result of persistent peak period patronage growth despite overcrowding. Due to current system constraints which limit minimum sustainable headways to 3 minutes 30 seconds, only one additional peak hour train can be operated until essential improvements are in place. The Daly City turnback is a critical element required for reducing headways significantly below current levels since it will provide a much more efficient terminal track configuration allowing for the achievement of service expansion as described on page I-9. An interim measure will include a reduction of the minimum scheduled headway to 3 minutes 30 seconds through train control modifications in the vicinity of Daly City Station. This will allow for the addition of one peak hour train as stated above. Current constraints limit inbound and outbound train movements (hence, turnback time) at Daly City to 3 minutes 45 seconds.

Enhanced Central Train Control Computer

The central train computer in conjunction with various supporting wayside equipment provides systemwide train supervision. The existing central computer is capable of monitoring the movement of up to 49 trains at any one time. Expansion of central control capabilities is needed to allow for on-line train operations exceeding this limit starting in mid 1987. Current plans call for an enhancement of the existing system to be operational by mid 1986. Once in place, the integrated control system (ICS) will allow BART to operate 75 on-line trains initially, with the capability of expanding the control system for operating 115 trains.

Vehicle Fire-Hardening

As a result of the January 1979 Transbay Tube Fire and subsequent investigation, BART is restricted to operating no more than one train between any two subway air vents per direction at any given time. This is a precautionary measure imposed to minimize the risk of smoke from a burning train being drawn past other trains. The removal of this restriction is anticipated following the completion of the District's fire-hardening program which is scheduled for completion by December 1985. Under this program all vehicle wall and ceiling liners and floors will be reconstructed to reduce flammability and toxic smoke emissions. Until this project is completed, widely spaced vents located in the Berkeley Hills Tunnel and on the San Francisco line between Civic Center and 16th Street stations limit headways to approximately 3 minutes 30 seconds in San Francisco and 4 minutes 30 seconds on the Concord line.

KE Track

The new third track and related turnouts are to be operational by mid-1985 adding increased operational flexibility and capacity for the Oakland wye, a critical route merging point on the system.

Primary Train Detection

Provision of increased system capacity will require modifications to the existing ATC system, including the elimination or modification of SORS. Projects required to accomplish this are to be identified by the Primary Train Detection Study. The System Performance Study may also identify specific modifications which will permit shorter headway operations, including those which may be required for the primary train detection system.

Except for the latter project, all of the above improvements are essential to increasing BART capacity such that by mid 1987, 53 on-line trains can be provided to meet patronage growth (10 trains above today's level), with additional capacity expansion up to 74 on-line trains anticipated by 1990. This latter service level will depend upon the implementation of projects to be identified in both the Primary Train Detection and System Performance Studies. Until this time, the District will strive to improve performance within existing operational limitations. Priority capital projects in support of basic system service and capacity are summarized in Figure II-13 beginning on page I-55.

PROGRAM AREA OBJECTIVES

Revised operating performance objectives for the current five-year time period are identified in Figure II-2 below.

Figure II-2

BASIC SYSTEM SERVICE AND CAPACITY PERFORMANCE OBJECTIVES

FY 1984/85

1. Balance capacity where possible such that load factors for peak period trains which can be lengthened or shortened (consists between 4 and 9 cars) are relatively equal and provide offpeak service such that no train load factor exceeds 1.05.
2. Operate weekday peak period Transbay service in the peak direction providing at least 98.0% of scheduled train throughput and 97.5% of scheduled car throughput on a monthly average basis.
3. Make available 106 A-cars and 261 B-cars for revenue service by 4 a.m. (weekdays).
4. Increase peak period capacity from 43 trains to 45 trains by adding one train each to the two most heavily travelled routes (Fremont/Daly City and Concord/Daly City).

FY 1985/86 to FY 1988/89

1. Operate 4-route weekday service with the capability of providing sustained 3 minute 10 second-headways by July 1987 following the completion of the Daly City turnback reducing to 2 minutes 30 seconds by July 1988 following the completion of remaining capacity expansion projects.
2. Support the following weekday car requirements (as of the fourth quarter of each fiscal year):

<u>Service Requirements</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
A-Cars	115	115	115	115
B-Cars	272	272	272	272
C-Cars	22	42	78	112
TOTAL	409	429	465	499

<u>Service Distribution</u>				
On-Line	366	386	408	437
Spares	43	43	57	62
Fire Hardening	0	0	0	0
TOTAL	409	429	465	499

<u>Total Fleet:</u>				
A-Cars	136	136	136	136
B-Cars	303	303	303	303
C-Cars	26	146	150	150
TOTAL	465	585	589	589

PROGRAM AREA C: EXTENSION SERVICE AND CAPACITY

The original BART plan included a multi-phased program to provide rail service well beyond areas presently served. The withdrawal of San Mateo and Marin counties prior to the 1962 bond election resulted in voter approval of the 71-mile basic system in the current three-county District and indefinitely postponed further development of the rail system. Over the years, the District has continued to coordinate extension plans with local agencies while investigating the full impacts of extending the system. Extension plans have received intensive public and private review, and they continue to be revised and updated in response to suburban growth and changing economic conditions.

As an interim measure until extensions can be constructed, BART provides express bus service between key transfer stations and regional travel corridors in the District not presently served by rail (see Program Area D: System Access, on page II-27).

Past study has indicated BART to be a viable mode for serving regional transit needs in four travel corridors located in the current three-county District: Pittsburg-Antioch, Warm Springs (Fremont), Livermore-Pleasanton, and the West Contra Costa I-80 corridor. In addition to these corridors, BART has also been investigated as a potential regional transit improvement in the Bayshore (US 101) corridor in San Mateo County. This latter extension, however, involves resolving the issues of extending BART outside the three-county District priority.

FY 1983/84 OBJECTIVE STATUS

The District's FY 1983/84 objectives for system extensions were to complete acquisition of Priority I sites by January 1, 1984 and to complete the Draft Environmental Impact Statement (DEIS) for the North Concord and Warm Springs extensions. The adopted 1983 budget allocated \$9 million for Priority I site acquisition, \$2 million of which was allocated from the operating budget and \$7 million from District Capital Reserves.

Extension planning during the first quarter focused extensively on the "New Transit Starts and Extensions" hearings initiated in July by the Metropolitan Transportation Commission (MTC) in an effort to obtain a regional consensus for such projects over the next ten years. In preparation for the MTC hearings, the BART Board adopted in September 1983 and amended in February 1984 its "BART Extension Staging" policy (see Figure II-3 on page II-16) which identified three phases of extensions within the current three-county District priority and three phases of extensions outside the current District. All extensions within a given phase are to be implemented concurrently. The extensions outside the current District are also "subject to a satisfactory cost-sharing arrangement." BART presented its extension program at the MTC hearings in September 1983 which were held in Daly City and Hayward.

Also in the first quarter, the West Contra Costa Extension Study's Final Report was circulated for public review and comment, and several public hearings were held to compare the alternative BART alignments developed. Additionally, preparation of the Final Report for the Livermore-Pleasanton Extension Study Update Analysis was continued and The North Concord Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) workscope development progressed.

Within the first quarter, the District also purchased several Priority I right-of-way sites resulting in the completion of negotiations for 100% of the sites required for the proposed Castro Valley station, and 50% and 40% of the sites required for the proposed West Pittsburg and East Antioch stations, respectively.

ADOPTED BART EXTENSION STAGING¹

WITHIN CURRENT THREE-COUNTY DISTRICT PRIORITY

- I. North Concord/West Pittsburg
Irvington/Warm Springs
Castro Valley/Dublin
San Francisco Airport²
- II. Pittsburg/West Antioch/East Antioch
Pleasanton/West Livermore/East Livermore
San Francisco³
I-80 Corridor (Partial)
- III. San Francisco³
I-80 Corridor (Partial)
San Ramon Corridor

OUTSIDE CURRENT DISTRICT (Subject to a satisfactory cost-sharing arrangement)

- I. Serramonte/Tanforan
- II. Millbrae
Milpitas/San Jose
- III. Burlingame/Menlo Park/Palo Alto/San Jose

1. The several segments shown under each Roman numeral are understood to be implemented concurrently.
2. In accordance with Resolution No. 3095 adopted by the District Board of Directors on February 1, 1984, BART supports the establishment of a people-mover, or some other mode of travel, to the Oakland Airport before or at the same time that an extension of BART is built to San Francisco Airport.
3. San Francisco has a BART commitment for a northwest corridor extension or an equivalent project.

Initial activities in the second quarter focused extension planning on adoption of the preferred route for the West Contra Costa Extension. The Board adopted an alignment from the existing Richmond station moving northward along the Santa Fe Railroad to Rumrill Boulevard in San Pablo. The alignment then follows Rumrill Boulevard to a Contra Costa College station (San Pablo) and a Hilltop Mall station (Richmond) and then traverses Interstate-80 right-of-way northward to stations at Appian Way (Pinole) and State Route 4 (Hercules).

Also in the second quarter, the Final Report of the Livermore-Pleasanton Extension Study Update Analysis was circulated to the public in December for comments and future review by the District Board of Directors. Additionally, BART assisted MTC in the initiation of the MTC directed Fremont-San Jose Corridor Study (Phase I) which includes the BART Warm Springs Extension. Finally in December, MTC also released its staff recommendations for the regional "New Transit Starts and Extensions" for transit operator review and comment.

FUTURE OUTLOOK

Extension planning activities for the remainder of the 1983/84 fiscal year are expected to focus on the four BART projects included in the MTC New Starts and Extensions Program. The Livermore-Pleasanton Extension Update Analysis was presented to the Board of Directors in March 1984 for route adoption between Bayfair and Dublin. Based on this most recent effort and resolutions passed by the cities of Dublin, Pleasanton and Livermore, the BART Board of Directors has since adopted an extension alignment along SR-238 and I-580 between Bay Fair Station and Dublin (near the I-580/I-680 interchange). Further analysis is required to delineate the alignment between Dublin and Livermore.

Efforts will continue in negotiating acquisition of Priority I right-of-way sites and acquisition of the U. S. Department of the Navy land for the North Concord station site.

PLANNED IMPROVEMENTS

Extension planning efforts within the current five-year SRTP timeframe will focus on preserving extension rights-of-way through coordination with local planning agencies and by the purchase of Priority I parcels by late 1984 which have been determined to be in imminent danger of development. Funding for this purpose has been provided through a capital allocation from the District's operating budget.

Concurrent efforts will focus on evaluating the Livermore-Pleasanton Extension alignment between Dublin and Livermore, development of the North Concord AA/DEIS, and assisting MTC in completing Phase I of the Fremont-San Jose Corridor Study which includes the BART Warm Springs Extension.

Projects in support of BART's extension program are identified in Figure II-13 beginning on page II-55.

PROGRAM AREA OBJECTIVES

The performance objectives for this program area are identified in Figure II-4 below:

Figure II-4

EXTENSION SERVICE AND CAPACITY PERFORMANCE OBJECTIVES

FY 1984/85

1. Secure UMTA approved workscope in order to complete the Alternatives Analysis/Draft Environmental Impact Requirements for Phase I of the BART Extension policy by June 30, 1985.
2. Complete acquisition of purchasable station sites in Phase I of the BART Extension policy and complete acquisition of all planned park/ride lot sites by June 30, 1985.
3. Prepare Transit Center Plans/Agreements for West Pittsburg, Dublin and Warm Springs by June 30, 1985.
4. Revise express bus system for park/ride/freeway operation, using newly constructed park/ride lots, interim park/ride lots, and high density express bus stops.

FY 1986/87 to FY 1988/89

1. Continue to implement the Extension Right-of-Way and Facilities Expenditures program.

PROGRAM AREA D: SYSTEM ACCESS

The original BART plan envisioned a major coordination effort and restructuring of local transit routes to provide high levels of access to rail stations. With 113,600 average weekday trips and 17,262 automobile spaces provided when Transbay service began in September 1974, BART parking facilities then averaged a 79% noontime occupancy. December 1983 weekday ridership averaged approximately 201,500 trips with 4,960 more parking spaces provided now than in 1974. Despite these additional spaces, systemwide average noontime occupancy has risen to 95%.

BART patron access needs in outlying suburban areas are difficult to serve by transit, as past experience has shown. Consequently, the automobile is the most widely used and effective means for travel to BART in these areas. As shown in Table II-4 on page II-20 the District now provides 22,222 automobile spaces at 23 stations, or 28.7% more than when Transbay service began. And, at a 95% average noontime occupancy, lack of parking is a definite deterrent to many of those who use the system and for others who would if parking space were available.

Past efforts have included the implementation of innovative alternatives to parking, including: special shuttles, exclusive bus lanes in the immediate vicinity of stations, improved bus waiting areas, interoperator transfers and passes, bicycle racks and lockers, and a car-pool program. All of these have met with varying degrees of success, depending upon their location. The periodic Passenger Profile and Latent Demand Surveys have provided detailed access information for both users and nonusers of the system. This information has been utilized to update BART's Access Plan. Further, numerous improvements designed for the special needs of the elderly and handicapped have been implemented over the years (in addition to those originally incorporated into the system), making BART a viable form of transportation for mobility impaired persons. This includes BART express buses which are accessible to persons in wheelchairs.

As identified under Extension Service and Capacity, the District's Express Bus Program provides service between key BART stations and travel corridors within the District presently not served by rail. A separate plan addressing express bus improvements made prior to July 1983 includes: increasing service frequencies (reduced headways) on established routes, streamlining routes to improve travel times, implementing service on new routes to rapidly developing suburban areas, improving rail/express bus service coordination, and implementing fare discounts for express bus/rail travel.

Table II-4

BART STATION PARKING INVENTORY
(As of December 1983)

<u>STATION</u>	<u>TOTAL¹ SPACES</u>	<u>MIDDAY² SPACES</u>	<u>ALL-DAY SPACES</u>
Concord	1,663	154	1,509
Pleasant Hill	1,586	180	1,406
Walnut Creek	1,168	115	1,053
Lafayette	1,047	45	1,002
Orinda	1,083	62	1,021
Rockridge	776	23	753
Richmond	754	33	721
El Cerrito Del Norte	1,054	134	920
El Cerrito Plaza	509	44	465
North Berkeley	504	93	411
Ashby	560	16	544
MacArthur	585	0	585
Daly City	1,877	484	1,393
Oakland West	403	12	391
Fremont	1,525	55	1,470
Union City	1,049	39	1,010
South Hayward	880	88	792
Hayward	967	48	919
Bayfair	1,408	111	1,297
San Leandro	1,066	74	992
Coliseum	923	75	848
Fruitvale	730	119	611
Lake Merritt	105	0	105
TOTAL PARKING SPACES	22,222	2,004	20,218

1. Total spaces include BART owned and leased spaces both paved and gravel.
2. Midday spaces are reserved for off-peak parking and are not available between 7 a.m. to 9 a.m.; also includes BARTPOOL spaces which are available to all patrons after 9 a.m.

FY 1983/84 OBJECTIVE STATUS

Two system access objectives were adopted by the District Board of Directors for FY 1983/84 in support of BART's Access Implementation Program. While this program does address a wide range of access needs, previous study and experience has led to a parking emphasis as a primary means of accommodating increased ridership. A second major concern is in the area of improving express and feeder bus service and productivity for more effective (nonauto) transit access to existing rail stations.

The first objective relates to automobile parking and calls for quarterly surveys by station for the purpose of determining the time all-day and mid-day parking lots fill on a typical weekday. The assumption here is that the earlier a lot fills, the greater the need to provide additional parking at a particular station.

A procedure for conducting the quarterly parking lot surveys has not been established to date. Hence, surveys as called for under this objective have not been conducted. Other regularly scheduled (semi-annual) parking surveys are conducted by station agents to determine 12-noon parking facility occupancy. The results of these "fixed-time" surveys, however, do not address the intent of the FY 1983/84 objective which requires information regarding the various times each lot fills.

Activities during the July-December 1983 period which support increasing BART's parking supply include:

- o A 20% (98 space) increase at MacArthur Station starting in July 1983 as the result of a test study which eliminated all parking stall striping (this was coordinated with the resurfacing of the lot). This increase is due to more closely spaced vehicles which will later serve as the basis for re-striping of the new surface.
- o Stepped up efforts on the part of District Police during the July-September 1983 quarter to discourage nonpatrons from using BART parking facilities.
- o The addition of 117 parking spaces at Union City Station in December 1983 as part of the District's Parking Lot Redesign Project.

In addition to the above parking expansion projects which have already been completed, the following projects are expected to be opened to the public by the end of FY 1983/84. With the completion of these projects, BART's parking space inventory is expected to be 22,467 spaces by June 1984:

- o Sacramento Northern Railroad right-of-way parking lot at Concord Station to provide 425 paved spaces (to replace a 440-space gravel parking lot which was closed due to a lease termination in June 1984).
- o Glen Park Station midday parking and kiss/ride facility, 58 additional spaces.
- o Lake Merritt Station (in conjunction with the completion of the new Regional Administration Facility), 85 spaces.
- o Union City Station parking lot redesign, 117 spaces (for a total of 234 new parking spaces at this station added in FY 1983/84).

The second system access objective adopted for FY 1983/84 relates to improving BART express bus effectiveness by maximizing the ratio of express bus/rail (transferring) passengers to hours of express bus operation. This objective is predicated on the assumption that the higher the ratio for this indicator, the more effective BART express bus operations would be for accommodating longer distance travel. This is particularly relevant in view of the current express bus operations "local" as well as "express" orientation. Very limited data, however, are available concerning transfers between BART express buses and rail. Based on what is known, an estimate of 30% was made for all express bus riders who transfer to BART trains. While the composite indicator value has been estimated, the "softness" of the data with regard to bus/rail transfers greatly limits its usefulness in evaluating express bus operations. Express bus improvements implemented during the first half of FY 1983/84 include:

- o Start up in July 1983 of the new Martinez Link on "Z" Line between El Cerrito del Norte Station and the Contra Costa County Government Center in Martinez via Richmond and Hilltop Shopping Center.
- o Adjustment of Livermore Valley - Hayward/Bayfair express bus schedules in September 1983 to improve transfer coordination between this service and bus schedules operated by the City of Livermore.

An additional bus improvement (for connecting MUNI and SAMTRANS service) is the scheduled completion of the Daly City busway canopy by June 1984.

An evaluation of the bus light signals installed at all BART express bus loading zones at rail stations (to alert bus drivers that a train is about to arrive indicating they should wait for connecting passengers) was completed in June 1984. A program to expand this system to stations in addition to those served by BART express buses is currently awaiting the outcome of this evaluation. Currently, only BART and CCCTA bus operations adhere to this signaling system.

BART express bus patronage for average weekdays increased from approximately 8,600 trips during the July-September 1983 quarter to 9,000 during October-December 1983. Average Saturday express bus ridership also increased, from 4,400 during the first quarter to 5,000 during the second. Sunday ridership remained unchanged from quarter to quarter, at an average of 3,000 trips.

In addition to the above parking and express bus access improvements, is the impact of the combined \$24 monthly BART/MUNI Fast Pass which was made available for intra-San Francisco travel starting in April 1983. This important access improvement, which addresses AB 86 Interoperator Transfer Rules and Regulation, as passed by the California Legislature in 1979, has resulted in substantial savings to San Francisco patrons in terms of both cost (up to 52%) and travel time (up to 70% for travel to downtown San Francisco from outlying Mission Corridor locations). Fast Pass usage is summarized in Table II-5 on page II-23.

Table II-5

BART/MUNI FAST PASS USE

	<u>Total Trips</u>	<u>Average Weekday</u>	<u>Average Saturday</u>	<u>Average Sunday</u>
April	273,221	11,723	3,903	1,879
May	329,302	14,062	4,890	2,426
June	340,406	14,150	4,827	2,452
July	322,110	14,121	4,884	2,266
August	363,409	14,504	5,125	2,329
September	393,329	17,127	5,719	2,598
October	417,665*	17,861	6,250	2,841
November	413,479	18,070*	6,530*	3,000*
December	390,488	16,640	5,225	2,880
*Highest monthly figures to date . Lower December Fast Pass usage reflects much lower ridership between Christmas and New Year.				

It is recognized that improved transit access such as the BART/MUNI Fast Pass (vis-a-vis improved transfers and schedule/fare coordination as called for under AB 86) can lead to a reduction in the parking spaces required to accommodate system access demand. In view of this, and the related issue of emergency energy contingency planning, the District will continue to coordinate with other Bay Area transit operators, MTC, and others for the purpose of realizing improved transit access to BART. Through the remainder of FY 1983/84 BART plans to:

- o Continue final design for the Concord transfer information center.
- o Initiate final design of passenger amenities to be installed in the completed structure for the Fremont transfer information center, with consideration for including transit information displays similar to that located in the Transbay Terminal.
- o Monitor and evaluate train arrival light system with regard to improving transfers between BART and buses.
- o Continue schedule coordination efforts with AC Transit.
- o Continue to evaluate station signing for possible funding application submittal either this or next fiscal year.

FUTURE OUTLOOK

The 1983 BART Latent Demand Study indicates that the current potential market for typical home to work travel is approximately 462,000 people. This population includes all persons who reside within 3 miles of a BART station and commute 5 miles or more to a workplace which is also served by BART. The results of this and other studies indicate that system access is clearly a growing problem. Access deficiencies are expected to become even more acute as patronage demand continues to increase in response to service expansion phasing over the next five years.

As noted in Chapter I (see page I-2), with no significant highway expansion programmed and existing facilities at or near capacity currently, BART, with its capacity expansion program, is essentially the only regional transportation facility which will be capable of accommodating substantially higher travel demand in the coming decade. This is particularly true for Transbay travel and other critical highway linkages such as the Caldecott Tunnel. These facilities are at capacity during most of the day with their delay impacts extending to all proximate highways. This increasing level of highway congestion along with very limited downtown parking, is expected to result in more and more people looking toward BART as a way of satisfying their travel needs. How these additional people will get to BART is the central focus of the District's Access Implementation Program.

The most pressing need in the coming years will be to alleviate BART's growing parking deficiency, estimated by 1988 to be on the order of 15,000 spaces above the current 22,222 space inventory. This deficiency translates into an estimated \$7 million annual net revenue loss as a result of access-constrained patronage growth. Funding is, of course, a critical concern. Progress towards implementing parking expansion projects will subsequently depend upon the District's ability to secure funds through conventional sources as well as through innovative financing methods.

In light of this deficiency, and the role that access has on system patronage in general, the District must reexamine the ways in which other Bay Area transit operations, including BART express bus service, can be improved to satisfy both local and BART access needs. As stated on page II-23 the BART/MUNI Fast Pass is a major step toward achieving a higher level of coordination of services, fares, and transfers. However, the serious parking deficiency in the Eastbay will continue to constrain ridership until a major parking expansion program can be realized.

The BART Express Bus Program has experienced rapidly increasing expenses over the past three years. As a result, there is a need to implement additional productivity improvements, including the restructuring of routes for more freeway oriented service and the transfer of local services now provided by BART express buses to respective local transit operators. Future efforts will need to examine the Express Bus Program with respect to specific performance indicators in order to minimize operating costs and to increase patronage and revenues. To assist in improving express bus performance, more timely monitoring and reporting of key financial and patronage information are necessary. Since the service is currently contracted with AC Transit, this will require working out a more effective arrangement of data collection and reporting. Operating expenses for shuttle bus services remain relatively high compared to revenues. The District Board of Directors is concerned with these BART access services and how they may continue to be provided through cost sharing arrangements with local transit operators.

BART also recognizes the need to continue to improve system access for mobility impaired persons. The District meets with representatives of elderly and handicapped persons on an on-going basis for the purpose of identifying improvements to increase mobility and safety in stations and on trains. In light of increased attention in this area, the District will need to continue to meet with representatives of the elderly and handicapped as an effective means of improving both accessibility and safety.

Improving both signing and availability of information for transit services in the vicinity of stations is also essential. As a result of the widespread reorganization of MUNI lines in San Francisco in February 1983 and the more recent phasing in of services under the Central Contra Costa Transit Authority, many station area maps located in BART stations are now outdated and need to be replaced with current information. Improvements which were scheduled to be made under an UMTA funded grant two years ago were cancelled as a result of the federal budget cutback.

PLANNED IMPROVEMENTS

Projects programmed for implementation in the current 5-year SRTP timeframe are discussed in the following sections. The improvements are divided into four basic groups, each relating to specific modes of travel or special considerations. These are: parking, BART express bus, inter-operator coordination, and elderly and handicapped needs.

Group 1: Parking Improvements

BART's current and projected parking deficiency has placed additional emphasis on the need to complete projects already in progress, and also to continue to identify other cost-effective projects as specified in the soon-to-be published Access Implementation Program (anticipated to be available by December 1984). An important short-term improvement is the Parking Lot Redesign Project which will continue to provide additional parking spaces through more effective use of existing lots. During FY 1984/85, parking lots at 4 stations are programmed for redesign which will result in a 1,190 space increase over the current parking space inventory, for a total of 23,660 spaces expected to be available by June 1985. This expansion is dependent upon obtaining city concurrence for the proposed projects which are summarized in Table II-6 below.

Table II-6	
PARKING LOT REDESIGN PROJECT SPACES PROGRAMMED FOR FY 1984/85	
STATION	SPACES ADDED
South Hayward	213
El Cerrito del Norte	557
Concord	193
Lafayette	227
TOTAL	1,190

Parking facilities at two additional stations are programmed for redesign in FY 1985/86. These are Bayfair with 353 new spaces planned and Fruitvale with 226 spaces.

An additional 155 spaces are also planned at South Hayward Station in FY 1985/86 as part of a project which calls for the paving of BART-owned land adjacent to the station. The timely implementation of these projects will add 734 new parking spaces for a total of 24,394 spaces by the early part of 1986. This is an 8.6% increase over the total number of spaces anticipated in BART's parking inventory by June 1984, and is 41.3% higher than the number of parking spaces provided when Transbay service began in September 1974.

Also during FY 1984/85, design work will be initiated on two 1,200-space parking facilities to be located at Pleasant Hill and Walnut Creek stations.

An additional parking project which is planned for completion by December 1985, is the paving of the existing gravel lot at Fremont Station. This will increase the number of parking spaces for this facility from 500 to 900 (bringing the total number of spaces provided at Fremont Station to 1,925).

The forthcoming Access Implementation Program will identify additional projects to be constructed in the current 5-year planning timeframe. This includes offsite parking to be provided in conjunction with shuttle bus access to stations. An example of this latter type of improvement is the planned 100 space park/ride facility for the east end of Alameda (island) with a shuttle connection to Coliseum Station.

Group 2: BART Express Bus Improvements

The District will be updating its Express Bus Plan which is expected to be adopted by the BART Board of Directors during the latter half of FY 1984/85. Until this effort is completed, the current Express Bus Plan will continue to guide the development and improvement of this operation.

The thrust of the District's efforts within the next five years will be to increase express bus service effectiveness and operational efficiency through a program of route streamlining, restructuring, and improved service coordination with rail. The phasing in of faster freeway oriented service in conjunction with freeway park/ride facilities is expected to result in substantially higher ridership as end-to-end bus travel times are reduced between 25% and 45%. This improvement will result in increased revenues and reduced operating costs, while also reducing automobile access requirements at rail stations served by BART express buses.

The phasing in of new freeway service is to occur following the completion of required park/ride facilities along segments or entire lengths of express bus routes. These facilities, for the most part, are to be located on future BART extension station sites, and support the District's Extension Right-of-Way Acquisition and Facilities Program.

Design work for three express bus park/ride facilities is programmed to begin during FY 1984/85. This is to include:

- o Bailey Road Park/Ride Facility (Pittsburg-Antioch BART extension, 200 spaces).
- o Hillcrest Avenue Park/Ride Facility (Pittsburg-Antioch BART extension, 200 spaces).
- o North Concord Park/Ride Facility (Pittsburg-Antioch BART extension, 500 spaces).

The completion of the first two projects will permit the start-up of freeway express bus service along SR-4.

Within the remaining four years of the current five year SRTF timeframe (July 1985 to June 1989), BART plans on completing the following park/ride facilities in addition to those listed above:

- o Sommersville Road and Railroad Avenue Park/Ride Facility (Pittsburg-Antioch BART extension, 200 spaces).
- o I-80 and Appian Way Park/Ride Facility (120 spaces).

- o I-580 near Stoneridge Shopping Center, Park/Ride Facility (200 spaces).
- o Stanley and Murrietta Boulevards Park/Ride Facility (200 spaces).
- o I-680 and Rudgear Road Park/Ride Facility (200 spaces).
- o I-680 and Alcosta Boulevard Park/Ride Facility (200 spaces).
- o I-680 and El Cerro Road Park/Ride Facility (230 spaces).

The completion of these facilities will permit the extension of freeway express bus service on SR-4 to Antioch, on I-80 north of El Cerrito del Norte Station, on I-580 to Livermore, and on I-680 between the Dublin regional transfer point and Walnut Creek Station.

Finally, the new contract with AC Transit, which is to take effect during the early part of FY 1984/85 for operation of BART express bus service, will give the District greater control over this significant expense item. The new contract is to include important performance and data reporting requirements to assure greater productivity for this service, particularly with the phasing in of more freeway (regional) service.

Group 3: Inter-Operator Coordination

In view of the need to improve system access for all travel modes, emphasis is also placed on coordinating BART rail service with other Bay Area transit operators. Minimizing transfer barriers to and from BART is, therefore, the focus of the third group of access concerns which consists of the following elements:

- o Schedules and Transfer Facilities
- o Fares and Transfer Agreements
- o Energy Contingency Requirements

The first two elements are in direct response to the MTC Transit Coordination Evaluation (as called for under AB 86 Inter-Operator Rules and Regulations), and also apply to the District's express bus service which was reviewed in the last section.

Concerns for energy contingency planning are an outgrowth of discussions held with Regional Transit Association participants. The following highlights BART's program for improving interoperator coordination within the coming five years for each of the above elements.

Schedule Coordination and Transfer Facility Improvements

Through the Regional Transit Association and ongoing discussions with AC Transit, the District will seek to implement full schedule coordination by June 1985 between BART rail and AC Transit bus service. This is particularly important with respect to the Eastbay regional transfer points (identified in the MTC Transit Coordination Evaluation) which include the following BART stations: Richmond, El Cerrito del Norte, 12th Street, Coliseum, Bayfair, Hayward, Fremont, Walnut Creek, and Concord.

As stated earlier, the evaluation findings for the currently installed bus light signals (at BART express bus/rail stations) will determine if expansion of these

signals to other stations is warranted. Should the signaling system be determined to be effective and expansion desirable, the District will request that AC Transit drivers adhere to the signals on all or selected routes which interface with BART (in addition to AC Transit operated, BART express buses which currently wait for connecting passengers when the bus light signals are activated by an arriving train).

The primary purpose of above improvements is to minimize patron waiting time for connecting transit services. There are instances, however, when a waiting time greater than 10 or 15 minutes is required, particularly in outlying suburban areas where bus frequencies are low or at night and on weekends in most localities. As the result of relatively high transit ridership over many low frequency bus routes and strategic end-of-the line locations, transfer information centers at Fremont and Concord Stations have been identified as needed improvements which are scheduled for design and construction during FY 1984/85. These facilities will provide shelter for connecting passengers as well as other amenities including: transit information displays (maps, schedules, etc.), covered walkways to bus loading zones, and vending machines inside waiting areas.

Beyond these improvements, the District will continue to work with other transit operators through the Regional Transit Association, in order to identify route modifications and new routes for improving transit access to and from BART.

Fare Coordination and Transfer Agreements

The District adopted a coordinated regional fare structure in September 1982 as part of the most recent fare increase which was implemented at that time. The introduction of a combined BART/MUNI Fast Pass in April 1983 was the second step taken toward enhancing fare coordination further and reducing inter-operator transfer barriers. The third major step is the planned AC/BART/MUNI Super Pass which is scheduled to become available by June 1985. Similar to the currently available BART/MUNI Fast Pass, the latest improvement will provide the public with the opportunity to purchase monthly passes valid for unlimited travel on the Bay Area's three largest transit systems. As for the BART/MUNI Fast Pass, cost saving and reduced travel times are the key incentives which are expected to result in substantially higher ridership on all three systems.

In addition to the above, BART will continue to actively participate in the Regional Transit Association for the purpose of implementing other improvements which may enhance fare and transfer coordination even further.

Energy Contingency Requirements

BART's energy contingency strategy reflects efforts carried forth through the Regional Transit Association over the past 3 years. These efforts resulted in a Regional Energy Contingency Plan which was published in December 1981. Consistent with this plan, BART will emphasize the need to accommodate commute travel to the San Francisco/Oakland regional core for work purposes. In the event of an energy crisis, the District and other Bay Area transit operators are to jointly implement a public information program to encourage flex-time scheduling and ride-sharing, and also to provide information to the public concerning where and during what hours transit capacity is available.

The District will adhere to the Regional Energy Contingency Plan recommendation of joining forces with other transit operators to determine the exact nature and severity of the crisis, identify specific actions needed to address it, and adopt a coordinated action plan for immediate implementation.

It is further recognized that BART's ability to absorb additional peak period, peak direction riders much beyond today's level is severely limited until at least mid-1987 when all 150 new C-cars are available for service and other key projects completed permit increased on-line capacity.

Group 4: Elderly and Handicapped Needs

BART recognizes the need to continue to improve system access for elderly and handicapped persons. Prior to the start-up of revenue service in September 1972, the system was retrofitted to accommodate special needs of persons in wheelchairs and for other mobility considerations. Numerous system improvements have been made over the years such as the installation of signs on trains indicating priority seating, electronically controlled doors, additional curb cuts, special ramps, close-in station parking, and restroom modifications. These and other improvements have been implemented primarily as the result of deficiencies which were identified by the BART Task Force on Access for Elderly and Handicapped Persons. This citizens group meets regularly with BART staff to discuss the needs of the elderly and handicapped community with respect to BART access and safety.

Two concerns are to be addressed during FY 1984/85 with the implementation of two projects which will focus on improvements to station elevator operation and platform edge recognition.

During FY 1984/85, modifications at up to 2 stations are to be initiated which address elevator operation and security. These include:

- o Installation of self-operation controls
- o Replacement of white courtesy telephones with intercoms
- o Installation of closed circuit security cameras

Additional elevator improvements and expansion of this program to other stations will depend on a follow-up evaluation of this project.

A second project to be implemented during FY 1984/85 is the installation of textured and/or brightly colored platform edge striping at three stations. This project has been proposed by the E&H Task Force as a means of providing a more easily recognizable delineation of the platform just in front of the trackway drop-off for low vision and blind patrons.

In addition to these planned demonstration projects, two other improvements have been identified and programmed for implementation, pending the availability of required funding. These are:

- o Installation of automatic doors at the Lake Merritt Administration Building. Manual doors are very difficult to open due to downdrafts and cross winds.
- o Installation of elevator controls in four secondary station agent control booths. This will reduce patron waiting time for elevator delivery at requested levels.

Beyond the above projects, BART will continue to meet with the Task Force on Access for Elderly and Handicapped Persons as an effective means of identifying other desired improvements. Specific capital projects and implementation schedules for system access are summarized in Figure II-13 beginning on page II-55.

PROGRAM AREA OBJECTIVES

Revised operating performance objectives for the current SRTP timeframe are identified in Figure II-5 below.

Figure II-5

SYSTEM ACCESS PERFORMANCE OBJECTIVES

FY 1984/85

1. Provide 1,190 additional BART-owned parking spaces at existing rail stations.
2. Implement full schedule coordination between BART and AC Transit by June 1985.

FY 1985/86 to FY 1988/89

1. Continue to implement access and express improvements as identified in the District's Access Implementation Program and Express Bus Plan.

PROGRAM AREA E: RELIABILITY

Improved service quality has largely been responsible for increased BART patronage. Continued growth of BART ridership will depend heavily on the extent to which service quality can be maintained and improved further, in light of adding more trains on the system to increase capacity.

The reliability improvement program and BART's well established preventative maintenance program have greatly assisted in improving service quality dramatically over the past six years. Whereas train on-time performance averaged well below 50% prior to FY 1978/79, today's level is slightly above 95%. In the same time period, the percentage of scheduled train dispatches completed increased from 86% to 99%, while the rate for passenger offloads was reduced by 7%.

FY 1983/84 OBJECTIVE STATUS

The percent of scheduled train dispatches completed averaged 99.1% for the July-December period. This level of performance compares favorably with the 99% objective level.

Peak period train on-time performance averaged 94.2%, compared to an objective level of 93.0%. For daily operations, on time averaged 95.4% compared to a 95% objective.

Regular reporting of the percent of passengers completing their station-to-station travel within five minutes of scheduled times began in October 1983. Patron-on-time performance for the July-December 1983 period is 93.9% (an objective level for FY 1983/84 has not been established to date).

The rate for primary delay events (causing peak period trains to be detained more than 7 minutes) averaged 2.36 events per 100 train runs during the first half of FY 1983/84 (versus an objective rate of no more than 2 events per 100 trains).

As a result of the peak period delay events, 6.29% of all peak period train runs were detained more than 7 minutes (93.71% not delayed). This compares to the current objective which calls for a maximum train delay rate of 6% (or 94% not delayed). The impact of each delay event thus detained an average of 2.7 trains more than 7 minutes.

The District's offload objective is measured in terms of a six-month average rate. As of December 1983, total offload incidents for the period 6 months (July-December) amounted to 765. This resulted in a total offload rate of 1.40 incidents per 1,000 car hours (versus an objective of 1.25 incidents per 1,000 car hours). A typical weekday averaged 5 offloads.

The 6-month rate for operational/miscellaneous caused offloads is 0.23 incidents per 1,000 car hours (versus an objective of 0.10).

For vehicle caused offloads, the 595 incidents during the 6-month period resulted in a rate of 1.09 incidents per 1,000 car hours (versus an objective of 1.10 incidents per 1,000 car hours). Wayside equipment caused offloads numbered 43, resulting in a rate of 0.08 incidents per 1,000 car hours (versus an objective of 0.05 incidents per 1,000 car hours).

Performance for automatic fare collection equipment, as measured by the maintenance technician rate, averaged 0.32 incidents per 1,000 trips. This is slightly higher than the objective of 0.30 incidents per 1,000 trips. The current rate is equivalent to approximately 62 AFC incidents systemwide per average weekday which require maintenance technician services.

Availability for entry/exit gates averaged 94.3% (versus an objective of 95%). For ticket vendors, availability was 88.4% (versus a 90% objective).

FUTURE OUTLOOK

Since December 1982, average monthly train on-time performance has fluctuated just above and below the desired 95% level for daily operations. Continued performance at current levels for the remainder of the year will assure BART's achieving this objective. Peak period on-time performance since December 1982 has consistently been

above 93% except for June 1983 which averaged 92.3% and September 1983 at 92.9%. Given this record, it is expected that the 93% peak period on-time objective will be achieved.

Year-end performance with regard to 7-minute train delays is expected to approach the District's 6% delay objective (or 94% of all trains not delayed more than 7 minutes). The train delay rate for the first half of FY 1983/84 was 6.29%, or within 5% of the objective.

The objective for 7-minute delay events is not expected to be achieved by year's end. July-December 1983 performance averaged 2.36 delay events per 100 train runs, or 18% in excess of the 2.00 objective rate for delay events.

The total passenger offload rate is expected to be in excess of the objective for FY 1983/84. July-December 1983 performance indicates that the rate for vehicle equipment caused offloads should be achieved, and that for wayside equipment appears likely. A substantially higher rate for operational and miscellaneous caused offloads, however, is expected to result in a higher than desired total rate.

AFC performance to date is slightly below the desired level with a 6-month rate of 0.32 incidents per 1,000 passenger trips versus an objective rate of 0.30. Slight improvement during the second half of the current year could result in the achievement of this objective.

Similarly, slight improvement for 6 AM entry/exit gate and ticket vendor availability could result in the achievement of these objectives by year's end. Entry/exit gate availability averaged 94.3% compared to a 95% objective, while ticket vendor availability averaged 88.4% versus a 90% objective.

PLANNED IMPROVEMENTS

The major thrust in this area will be to continue to improve service quality further and at a minimum to maintain performance standards under higher density train operations. This will be done by the following:

- o Continued scrutiny of both rolling stock and wayside equipment as regards failure trends and reliability rates using our MARIS information system.
- o Implementation of a time control system which will enable us to schedule more maintenance and reduce unscheduled maintenance.
- o Installation of the second generation ATO on BART's current fleet of A-cars, with which the C-cars will be equipped. The ATO remains the single subcomponent on the vehicle that does not meet acceptable reliability and maintainability standards. The new ATO will show an improvement of 25 to 1.

The District currently has 24 engineers dedicated to direct maintenance support. These consist of 12 engineers for revenue vehicle maintenance and 12 for wayside maintenance. Efforts are coordinated between these engineers and maintenance staff to solve problems, analyze failures, develop maintenance procedures, and implement modifications. Other BART engineers support longer range maintenance activities by providing designs for projects as they are identified (i.e., C-cars, Daly City tail track/storage facility, etc.). Since 1976, BART has increased on-line trains by 30% and the number of car hours by 57%, but decreased total maintenance staff by 12%. We are now at the point, however, where increases in service will require increase in maintenance personnel.

All maintenance staff participate in a comprehensive maintenance training program which includes certification following successful completion of required coursework. Additionally, maintenance staff are afforded the opportunity to advance their knowledge further through special training courses. A technical training staff of 16 people provides this service, in addition to general training courses provided by the District to enhance management's effectiveness.

The overall goal of the preventative maintenance program is to continue to provide high quality service through achievement of key reliability and maintainability objectives as well as attaining performance standards for all equipment. BART's Reliability Engineering Division continually monitors all aspects of equipment performance, with all relevant data stored on computer files. The data are then analyzed and trends regularly reported in daily, weekly, and quarterly publications along with any required special reports. This reporting network ties all levels of management to a common set of performance criteria while also highlighting system performance in the forefront of daily activities.

An additional effort in the area of reliability performance is the System Performance Study. When completed in March 1984, the results will provide important information concerning BART's optimum service capabilities based on reliability, safety, and capacity criteria. Important elements include installing new ATO units on all A-cars, and continuing to upgrade all vehicle traction motors. Other capital projects which address system reliability are identified in Figure II-13 beginning on page II-55.

PROGRAM AREA OBJECTIVES

Revised operating performance objectives for this program area are as identified in Figure II-6 below.

Figure II-6

RELIABILITY PERFORMANCE OBJECTIVES

FY 1984/85

1. Complete 99% of all monthly scheduled dispatches.
2. Conduct operations such that on a monthly basis 95% of daily terminal-to-terminal runs are completed within 5 minutes of scheduled run times with at least 93% during AM and PM peak periods for commute days.
3. Provide service such that 98% of peak period trains do not experience a primary delay exceeding 7 minutes and 94% are not delayed more than 7 minutes from all causes.
4. Conduct operations such that on a quarterly basis, 94% of all patron trips are completed on-time. All patron trips are on-time when trains run not more than 5 minutes late or 60 seconds early.
5. Provide service such that passenger offload rates remain at or below the following: vehicle equipment=1.10; wayside equipment=0.05; operations and other=0.20; and the total=1.35.
6. Maintain the overall AFC technician maintenance incident rate at or below 0.30 incidents per 1,000 passenger trips, and maintain or exceed a 6 AM average weekday availability rate of 95% for entry/exit gates and 90% for ticket vendors.
7. Maintain a 6 AM average weekday availability of 95% for elevators and 93% for escalators.
8. Maintain express bus ontime performance such that 95% of all runs arrive at their final destination within 5 minutes of schedule.

FY 1985/86 to FY 1988/89

1. At a minimum, maintain current reliability objective level performance under higher density train operations pending additional improvements which may be identified by the System Performance Study.

PROGRAM AREA F: SAFETY AND SECURITY

Patron safety has always been of paramount concern to the District. As such, facilities and operations planning are performed in concert with BART's Safety Department to assure adherence to accepted industrywide safety standards. Numerous improvements have been made in BART's 11-year operating history in addition to the safety features included in the system's original design. These include modifications to vehicles, stations, right-of-way protection, and parking areas which have been implemented as a result of recommendations

based on intensive and ongoing analyses of accident data. Further, the experience of the 1979 Transbay Tube fire and follow-up investigation provided BART and the entire transit industry with greater insight regarding emergency preparedness and life safety. The recommendations of this investigation were incorporated into an aggressive program to improve the safety of facilities and operations even further, which included the replacement of all vehicle seat cushions and covers with low-smoke/flame-resistant material.

Numerous other safety improvements were implemented in accordance with the investigation's recommendations. Equally as important has been the publication of an extensive and detailed emergency plan for BART which was developed in cooperation with local emergency service agencies. This has led to improved communications coordination and a better understanding of the BART system on the part of local fire departments and other emergency service providers. BART facility tours and drills have been regularly conducted to assure that emergency response times are minimized for critical kinds of situations at all system locations (i.e.: Transbay Tube, Berkeley Hills Tunnel, and for other subway, at-grade, and above-grade locations).

The District's annual patron accident rate has declined because patronage has increased more rapidly than the number of patron accidents. The number of annual passengers between FY 1978/79 and FY 1982/83, for example, grew by 30.4%, whereas the number of patron accidents decreased 2.9%. The resulting annual accident rate per million passengers thus declined 25.7%, from 21.8 to 16.2 during this four-year period.

The establishment of BART Police Services prior to the start-up of revenue operations in September 1972 was an early recognition of the District's special security requirements. Patron security has subsequently been emphasized throughout BART's planning and operational history.

Compared to many older rail transit systems, crime on BART has remained at a relatively low level. The trend over the past four years has been a fairly steady rate for incidents of patron-related crime, hovering for the most part between 15 and 18 incidents per million passenger trips on a 12-month average basis. A substantial increase in the number of disorderly conduct incidents, relative to all other categories of patron related crime has resulted in a rate of 19.0 patron related crimes per million trips for FY 1982/83. In part, this increase in disorderly conduct citations reflects the passage of State Legislation that covers Transit districts and empowers BART Police Officers to cite offenders.

This program area also focuses on the safety and security of BART employees. Discussion of this consideration is included in the following sections.

FY 1983/84 OBJECTIVE STATUS

Performance relating to patron safety is favorable as indicated by the patron accident rate which was lower than the stated objective. As of December 1983, the 12-month average accident rate was 17.0 incidents per million trips (versus an objective of 17.7). Actual incidents increased 4.8%, from 901 accidents during calendar year 1982 to 944 in 1983. For the current number of annual incidents, 745 (78.9%) occurred within stations with the remaining 199 (21.1%) accidents related to train operations.

Total incidents of patron-related crime increased 18.2%, from 969, during 1982 to 1,145 currently. Significant decreases were recorded for incidents of purse snatching (from 86 incidents during 1982, to 52 during 1983), and for sex offences

other than rape (from 84 to 67). Offsetting these decreases were significant increases for disorderly conduct (from 400 to 602), assault/battery (from 240 to 264), and for arson (from 13 to 20).

The resulting 12-month rate increased 15.1% from 17.9 incidents per million passenger trips last year to 20.6 this year (versus an objective of 18.5 crimes per million trips). Analysis of patron related crime data indicates that the large increase for the District's rate is due primarily to continued growth of disorderly conduct incidents versus substantially lower growth for all other categories of patron related crime. There were 400 incidents of disorderly conduct recorded during 1982, versus 569 incidents for all other patron-related crimes. This compares to 1983 totals of 602 for disorderly conduct and 543 for all other categories.

Employee lost time injuries during July-December 1983 resulted in a loss of 0.31% of all hours worked. This compares very favorably to a lost-time objective of no more than 0.65% of hours worked.

FUTURE OUTLOOK

Patron accidents have held fairly steady over the last three years, fluctuating between a low of 838 (12-month incidents) to a high of 1,003. As of December 1983, current 12-month incidents are 944. Given this relatively flat profile versus steadily increasing patronage, BART's 12-month patron accident rate is expected to slowly decline throughout the current fiscal year. Year-to-date performance is favorable, meaning that by year's end the 17.0 incident rate reported currently should be even lower, perhaps in the vicinity of 16.5 incidents per million trips.

BART's patron-related crime rate is currently substantially higher than the desired objective. The upward trend for the 12-month average rate which began in early 1982 is expected to continue and result in a year-end rate of approximately 21.1 incidents per million trips (or 14.1% higher than the 18.5 objective rate). The largest single component of the patron-related crime rate is for disorderly conduct which constitutes slightly more than one half of all crime incidents during 1983. Adding assault/battery brings this figure to just over three-fourths of all incidents. District efforts will, therefore, need to focus on improving police deployment strategies so that increased visibility and other surveillance methods may deter these as well as more serious crimes against BART patrons and employees.

The impact of employee lost time industrial injuries has resulted in a substantially lower rate of employee lost time relative to the FY 1983/84 objective. With a year-to-date rate less than one half the desired performance level, it is currently anticipated that the District will achieve this objective. Future efforts will need to continue to enhance the District's job training program to maintain favorable performance in this area.

Completion of important emergency preparedness and life safety improvements which will permit BART to operate safely under higher density train operations is essential. Providing a new Daly City turnback, ICS, C-cars, and other capacity projects alone will not permit the operation of closer headway service. A critical element is the removal of the currently imposed CPUC subway vent separation requirement. This can only come about through the completion of the District's vehicle fire-hardening program followed by timely CPUC authorization to operate closer headway service.

PLANNED IMPROVEMENTS

Efforts in the area of safety and security will continue to concentrate on minimizing incidents of patron-related crime and accidents for both patrons and employees.

The effective deployment of BART police will be the prime strategy for combating crime on trains, in station areas, and along track rights-of-way. Computer programs for tracking and dispatching police officers will continue to be used, as well as other information systems for the accurate and timely reporting of crime data.

In the area of patron safety and property protection, efforts will continue to focus on the District's comprehensive emergency preparedness and life safety program in order to minimize the risks to BART's growing ridership. Expansion of system capacity will require the removal of the CPUC imposed subway vent separation requirement so that trains may operate closer together throughout the system. The completion of the vehicle fire hardening program, currently scheduled for December 1985, is an important project for improving fire safety and a prerequisite for eliminating this capacity constraint. Under this project, all vehicle floors will be improved and ceiling liners will be replaced to reduce flammability and toxic smoke emissions.

In addition to vehicle safety improvements are those for wayside facilities required for improving passenger safety and property protection. To date, wayside safety projects in excess of \$3 million have been identified based on recommendations contained in the Gage Babcock Wayside Safety Study (completed in June 1982) and those of the District Wayside Task Force, which is composed of BART safety staff, representatives of Gage Babcock consultants, local fire departments, and others. These projects fall into four categories of improvements: critical life safety, important life safety, primary property protection, and less important property protection.

An additional project is the Regional Rail Transit Emergency Training Program which will involve approximately 4,500 participants from BART and local fire departments. This program will provide classroom instruction, simulated emergency drills, and other techniques for the purpose of improving emergency preparedness and response times.

The completion of these safety improvements by 1987 and others soon to be identified will provide increased levels of safety and emergency preparedness. This will permit BART to operate closer headway service while maintaining stringent safety standards. Capital projects addressing improved BART safety and security are identified on in Figure II-13 beginning on page II-55.

PROGRAM AREA OBJECTIVES

Updated operating performance objectives for Safety and Security are identified in Figure II-7 below.

Figure II-7

SAFETY AND SECURITY PERFORMANCE OBJECTIVES

FY 1984/85

1. Provide sufficient police coverage such that the rate of patron-related crimes does not exceed 18.5 per million passengers.
2. Continue to provide an environment for patron circulation through trains and stations such that the accident rate does not exceed 17.7 per million passengers.
3. Reduce the total annual amount of employee lost time due to injuries as a percent of time worked to 0.50% or less.

FY 1985/86 to 1988/89

1. Maintain a rate of patron-related crime below those for District communities and other transit systems in the Bay Area and in other metropolitan areas.

PROGRAM AREA G: FINANCIAL AND OPERATIONAL EFFICIENCY

As discussed in Chapter I (see page I-24), cost effectiveness and productivity are integral to overall financial performance and the economies of providing expanded levels of service. Continuous monitoring of expenses for all phases of operations and capital project development, in conjunction with stringent budgetary controls, have enhanced District financial performance. Additionally, improved management information systems have permitted the District to respond more quickly to changing operational requirements.

These efforts to improve BART productivity have, in real terms, resulted in declining costs per passenger, per passenger mile, and per vehicle mile over the past five and one-half years. This is shown by the constant dollar comparisons on pages I-29 and I-30. At the same time, BART patronage and vehicle miles per equivalent employee have risen. This is solid evidence of BART productivity. Additional gains in the future may be harder to attain, thus management efforts should be focused on strategies to hold the line on expense, and to evaluate new ways of allocating resources in light of potential revenue returns. BART's revised Productivity Improvement Program reflects this concern, as will be discussed below.

The availability of key financial and operational performance data is an essential element required for effective management and decision making in order to realize greater levels of efficiency. Timely and accurate information reporting has thus played a vital role in evaluating BART performance and identifying specific areas requiring improvement. In addition to the annual Short Range Transit Plan, seven regularly published reports serve as important sources of financial and operational information. These are as follows:

Monthly Patronage Report

Presentation of BART ridership data for calendar and budget periods, relative to forecast. Other data include passenger miles, average fares, and average trip distance.

Budget Performance Report

Documentation of monthly and year-to-date expenses, revenues, and financial assistance for operations relative to adopted budget.

Quarterly Financial Statements

Documentation of District assets, liabilities, capitalization, financial operating results, and debt service funds.

Quarterly Performance Report on System Objectives

Status of District operating performance objectives, priority capital projects, and program area highlights.

Quarterly Operations Performance Report

Detailed documentation of operations performance with emphasis on reliability.

Quarterly Affirmative Action Report

Documentation of progress toward achieving the District's workforce representation objectives.

Annual Report

Highlights of each fiscal year, including those for operations, capital improvements, and year-end financial statements.

In support of making these documents available in a timely manner, BART upgraded its management information systems in order to provide improved data storage, manipulation, and reporting capabilities. The improvements made to date address a wide range of District concerns including financial, train operations, inventory control, labor, and crime reporting.

FY 1983/84 OBJECTIVE STATUS

Five financial and operational efficiency objectives were adopted by the District Board of Directors for FY 1983/84. As a result of the critical need to maintain timely data reporting for the monitoring of these objectives, Performance Data Collection and Reporting was eliminated as a separate program area and its respective objectives for key financial and operations reports incorporated into Financial and Operational Efficiency. Hence, the status for the sixth objective (adopted as "J.1" in the program area objective nomenclature), will be presented in this section. In addition to these, are other objectives which have been identified as part of the District's FY 1983/84 Productivity Improvement Program. Status for the PIP objectives is summarized in Figure II-9 on page II-43.

Favorable financial performance was recorded for the first six months of FY 1983/84: With ridership 5.3% above forecast, passenger revenue was favorable relative to budget by 0.4%. Passenger revenue has grown less than total ridership as a result of the terms of the BART/MUNI Fast Pass agreement. BART is reimbursed 60¢ for each Fast Pass trip which was formerly made on a regular BART ticket. During July-December 1983, 36.4% of Fast Pass trips were of this type. For the remaining 63.6% of Fast Pass trips, BART was reimbursed 5.2¢ per trip in accord with the agreement. Excluding these latter trips, total ridership during the 6-month period was 27,243,005 trips, or 0.2 % below forecast. Other operating revenue (primarily from interest and advertising income) was 28.6% above budget. Total revenue for the District during the July-December 1983 period was 2.5% above budget.

Operating expense also was favorable relative to budget. A significant factor was a 13.7% lower than forecast electrical power cost (\$6,688,300 actual expense versus a budget of \$7,753,100). This resulted from an abundance of hydroelectricity at reduced rates this year and lower than anticipated fuel oil prices. This, together with other below-budget labor and nonlabor expense, resulted in total operating expense 6.4% below budget for the first half of FY 1983/84.

With rail operating expense 6.9% below budget, rail cost per passenger mile was 16.4¢ during July-December 1983, 9.4% under the budget forecast of 18.1¢.

Farebox and operating ratios attained during the six-month period reflect this positive level of financial performance. BART's farebox ratio is 49.6% (versus an objective of 40%), with an operating ratio of 54.8%.

Underlying BART's favorable financial performance are productivity achievements for system utilization, employee output, and sick leave usage. System utilization (or the ratio of passenger miles to seat miles) is currently 35.0%, just under the June 1984 objective level of 35.2%. The number of vehicle miles per equivalent employee is significantly above the 14,236 objective, at 16,095. Employee sick leave use is at a 3.62% rate, versus a 3.50% objective.

Data continues to be collected and evaluated as part of the District's ongoing performance monitoring and assessment efforts. Key documents have been prepared and transmitted to the District Board of Directors, Department Managers, and other appropriate staff and outside agencies. Availability of the documents relative to the FY 1982/83 reporting objectives is summarized in Figure II-8 below.

Figure II-8				
KEY PERFORMANCE REPORT AVAILABILITY				
Report Title	Period Covered	Issue Date	Objective Date	Variance (Working Days)
Monthly Patronage Report	Jun 83	Jul 18	Jul 15	+1
	Jul 83	Aug 15	Aug 12	+1
	Aug 83	Sep 15	Sep 15	0
	Sep 83	Oct 18	Oct 14	+1
	Oct 83	Nov 10	Nov 15	-2
	Nov 83	Dec 15	Dec 14	+1
Budget Performance Report	Jun 83	Jul 29	Jul 22	+5
	Jul 83	Aug 26	Aug 19	+5
	Aug 83	Sep 15	Sep 19	-2
	Sep 83	Oct 20	Oct 21	-1
	Oct 83	Nov 17	Nov 21	-2
	Nov 83	Dec 16	Dec 16	0
Quarterly Financial Statements	Apr-Jun 83	Sep 2	Aug 5	+20
	Jul-Sep 83	Oct 31	Nov 4	-4
Quarterly Performance Report on System Objectives	Apr-Jun 83	Aug 25	Aug 5	+14
	Jul-Sep 83	Nov 22	Nov 7	+12
Quarterly Operations Performance Report	Apr-Jun 83	Sep 12	Sep 2	+5
	Jul-Sep 83	Dec 12	Dec 7	+3
Quarterly Affirmative Action Report	Jul-Sep 83	Oct 13	Oct 21	-6
Annual Report	FY 82/83	Dec 2	Oct 17	+31

FUTURE OUTLOOK

Year-to-date financial performance indicates that both the 40% farebox ratio and 18.1¢ per passenger-mile expense objectives will be achieved this year. Favorable performance beyond June 1984 will depend largely upon the District's ability to implement effective strategies to improve productivity while controlling costs in light of inflation.

STATUS FOR FY 1983/84 PRODUCTIVITY IMPROVEMENT PROGRAM OBJECTIVES

PIP ELEMENT	OBJECTIVE	JUL 83-MAR 84 STATUS	COMMENTS
Patronage Promotion	103,200 average weekday offpeak trips by June 1984	97,171	Growth for BART/MUNI and regular BART ticket trips is expected to result in a year end average approaching this offpeak objective.
	5,900 peak period Transbay reverse commute trips per weekday by June 1984	6,213	Increased East Bay employment opportunities and strengthening economy assisted in achieving this objective.
	10% of Oakland Coliseum gate attendance for major events	14%	BART's marketing efforts have resulted in substantial BART access to events at the Coliseum.
	204,400 average weekday trips by June 1984	201,647	Growth for BART/MUNI and regular BART ticket trips is expected to yield 206,00 per weekday by June 1984.
Multi Modal Access Improvement	Develop Access Implementation Program by January 1984	Expected completion in Dec 1984	Staff temporarily reassigned to express bus planning. Staff focusing on implementation of currently funded projects.
	200 additional parking spaces at Union City Station by December 1983	117 spaces opened by Dec 83 234 opened by Jan 84	
	Secure city approvals for 5 to 10 parking lot redesign projects by April 1984	Concurrence obtained for 5 projects	Discussions continuing for additional projects.
	Maximize BARTPOOL participation	435 BARTPOOL spaces provided Estimated to be 7.1	An 11-day survey indicates BARTPOOL occupancy between 64% and 38% for high and low usage weekdays.
	Maximize ratio of transferring express bus passengers to bus operating hours		Unavailability of data for express bus/rail transfers severely limits the usefulness of this indicator.
	Restructure M-express bus route by February 1984	Route not to be re-structured until Dec 1984	Delay in CCTA taking over service.
	Develop express bus contract specifications by January 1984 and put out to bid	Contract proposal forwarded to AC in April 84	AC Transit assumed to continue to operate service.
	Maximize Intra San Francisco patronage	36,033 average weekday trips 13,131 for Saturdays 6,509 for Sundays	Total BART/MUNI Fast Pass trips constitute 46.8% of all intra SF-BART trips. Average weekday pass usage has grown from 11,723 in April 1983 to 19,061 by March 1984 (62.6% increase).

Employee productivity has been very favorable as measured by vehicle miles per equivalent employee. Year-end performance is expected to surpass this objective. Since vehicle miles are not expected to increase significantly over the next two years, continued favorable performance will depend on limiting District workforce expansion.

The 35.2% system utilization objective has a good chance of being achieved, particularly in view of significantly higher utilization within San Francisco since the introduction of the BART/MUNI Fast Pass in April 1983. The three-car minimum consist constraint, in addition to other factors which govern train sizing, currently precludes the District from achieving significantly higher system utilization. Relatively small improvement is expected over the next three years. However, much better performance is anticipated with the completion of currently programmed capital projects as outlined in the "Planned Improvements" section below.

The employee paid sick leave rate for the first half of FY 1983/84 is just above the 3.50% objective. Continued efforts to control sick leave usage for the remainder of this year could result in an annual rate even more favorable than the current level of performance.

Efforts will continue to make essential documents available to both management and the District Board of Directors within the desired reporting periods. Additional enhancements to BART's management information systems should assist in meeting desired schedules.

PLANNED IMPROVEMENTS

Improved financial performance during the current SRTP timeframe is to be realized through stringent budget controls in concert with implementation of strategies to increase productivity. In support of this effort will be the timely availability of key financial and operations reports which permit BART management and the Board of Directors to be responsive to District needs and opportunities. Simultaneous improvements already noted in such areas as reliability, service delivery (throughput), and financial effectiveness attest to the gains BART has made in its 11 year operating history. Additional gains are anticipated this coming year and in subsequent years through the implementation of the District's annually revised Productivity Improvement Program. This program contains projects to be completed in the upcoming year and in the remaining four years of the 1984 SRTP timeframe which will result in even more favorable levels of cost-effectiveness, cost efficiency, and service-effectiveness while maintaining BART's high service quality. (Refer to Figure II-9 for a summary of status for projects included in BART's Productivity Improvement Program for FY 1983/84).

FY 1984/85 Productivity Improvement Program

BART's Productivity Improvement Program for FY 1984/85 includes short- and long-term components, each of which contains several elements.

In the short term, BART will be implementing a comprehensive marketing program during 1984/85 which will focus on increasing offpeak and reverse commute ridership and improved bus/rail service coordination with AC Transit. This program will include an expanded range of co-sponsored events held at facilities served by BART including but not limited to the Oakland Coliseum and San Francisco Moscone Center, improved system signing, and a prototype passenger information center to be installed at Oakland City Center-12th Street Station.

The program will also identify effective strategies to increase offsite ticket sales through the introduction of bank serviced automatic teller machines and adding new ticket outlets (under BART's "Tickets-To-Go" Program).

A second productivity improvement to be implemented during FY 1984/85 will be the start-up of two new peak period trains, one Fremont/Daly City during the peak hour and one Concord/Daly City during the balance of the peak period. These new trains will provide some incremental peak period/peak direction capacity until the completion of BART's Capacity Expansion Program will allow for substantially higher service levels. Also during the year, approximately 1,200 new parking spaces are to be provided through BART's Parking Lot Redesign Project.

The second Productivity Improvement Program component, BART's longer-range strategy, consists of the timely implementation of the District's Capacity Expansion Program. The completion of projects contained in this program is expected to result in substantially higher passenger revenues (through increased ridership) while also permitting BART to operate more efficiently. The Daly City tail track/storage facility and the new C-cars are two important projects which will allow for online train sizing and Westbay storage. Remaining Capacity Expansion Projects (identified in Figure I-4 on page I-9) also support improved productivity by satisfying critical needs for realizing higher service levels and related economies of scale in terms of cost-efficiency, cost-effectiveness, and service effectiveness.

BART's Productivity Improvement Program for FY 1984/85 is discussed in detail in Appendix B. All programmed capital projects having a direct impact on financial and operational efficiency are identified in Figure II-13 beginning on page II-55.

PROGRAM AREA OBJECTIVES

Updated operating performance objectives for this program area are identified in Figure II-10 below.

Figure II-10

FINANCIAL AND OPERATIONAL EFFICIENCY PERFORMANCE OBJECTIVES

FY 1984/85

1. Maintain a funded budget and farebox ratio of no less than 45.6% including 14.2% BART express bus operations and 47.4% for rail operations.
2. Maintain a rail cost per passenger mile of 18.1¢ or less.
3. Achieve a level of service output such that 12,434 vehicle miles are produced per equivalent District employee (based on 2,000 hours worked, including overtime and excluding capitalized labor).
4. Improve system utilization (passenger miles per seat mile) to 35.2% through continued monitoring of train capacity to match passenger demand patterns.
5. Maintain a paid sick leave rate of no more than 3.5% (9.1 paid days) annually per employee.
6. Transmit key performance reports to the Board of Directors, Department Managers, and/or other recipients within the following number of working days after the close of each reporting period: Monthly Patronage Report (10), Monthly Budget Performance Report and Quarterly Affirmative Action Report (15), Quarterly Financial Statements (25), Quarterly Performance Report on System Objectives (35), Quarterly Operations Performance Report (45), and the Annual Report (75).

FY 1985/86 to FY 1988/89

1. Continue to provide cost-effective and efficient service through the achievement of key financial and operational efficiency objectives.

PROGRAM AREA H: AFFIRMATIVE ACTION

The purpose of the District's Affirmative Action Program is to formalize efforts to provide equal employment opportunity to all qualified persons, including minority/ethnic groups and women, and to assure that minority business enterprises are afforded the maximum practical opportunities to participate in the performance of all District contracts. The intent of the program is also to improve methods of resolving equal employment opportunity problems in accordance with federal and state legislation. The overall goals of BART's affirmative action program are to:

- o To use Affirmative Action to achieve a District workforce at all job levels in which minorities and women are represented in proportion to their representation in the population of the BART District.
- o Increase opportunities for participation of minority business enterprise in District contracting.

BART's Affirmative Action Plan (adopted by the District Board of Directors in June 1983) includes programs to achieve 3-year workforce representation objectives for women and minorities. The objectives were developed based on population characteristics for the three-county District per the 1980 U.S. Census and address representation within 15 job groups. An important element of the Plan is a job training program to promote the upward mobility of women, including placement within nontraditional jobs and for minorities in all job classifications. Also included in the plan is an intensified community outreach program for the purpose of improving the availability of information regarding employment opportunities at BART.

BART's Minority Business Enterprise Program (adopted by the District Board of Directors in February 1984) includes procedures to attain practical participation goals for disadvantaged- and women-owned businesses in all District contracts over the next fiscal year.

Title VI

In compliance with Title VI (Civil Rights Act of 1964), BART submits to UMTA an assessment of rolling stock characteristics and distribution, a service area demographic profile, and service accessibility to specific minority and nonminority communities. A full assessment is submitted every 10 years based on most recent Census data. Interim updates are prepared annually reflecting service and/or fare revisions.

The District's 1983 submittal is based on 1980 census data which was used to prepare a profile of the service area including: population, median family income, civilian labor force, population trends, and automobile ownership. Profiles were prepared for both minority and nonminority populations as well as the total service area population.

A sample of 1,636 trip destinations were utilized in an analysis of travel time and costs for minority and nonminority analysis zones (based on Census tracts). Seven trip categories are included in the analysis. These are: employment, shopping, hospitals, social services, judicial courts, education, and central business district (includes downtown San Francisco and Oakland only).

Based on 1980 data, the total population for BART's service area is 2,539,385. This represents a population increase of 4.2% since 1970. Contra Costa County population increased 17.6%, the highest gain for all BART's counties.

The minority population represents 37.8% of BART's total service area. The breakdown by minority group is: Black 14.2%, Asian 11.6%, Hispanic 11.3%, and Native American 0.7%. Since 1970, the greatest population increases were 89.3% for Asian and 64.5% for Native American. Black population increased 18.8% with a 2.9% increase for Hispanics.

The total civilian labor force for BART's service area is 1,296,241. Minority labor force representation is: Black 11.8%, Asian 11.7%, Hispanic 10.3%, and Native American 0.4%.

Median income for BART's service area is \$21,355. Minority group median income is: Asian \$23,897, Hispanic \$19,972, Native American \$17,948, and Black \$14,954. Median income for Blacks residing in San Francisco is \$14,269, the lowest minority median income for all counties, while Asians in Contra Costa County have the highest minority median income at \$28,778.

The percent of service area households without an automobile is 18.3%. The Black population has the highest percentage of households without an automobile at 30.5% followed by 22.6% for Asians, 21.4% for Native Americans, and 18.9% for Hispanics.

The most important part of the Title VI assessment is the measurement of travel times and travel costs from a sample of analysis zones which are characterized as predominately minority and nonminority. UMTA establishes travel time standards for specific trip categories (the first six previously listed above). Accessibility is then assessed based on whether selected trips can be made within the accepted standards.

An analysis of accessibility within BART's service area was performed with respect to two sets of transit networks: all transit including BART, and all transit not including BART. The analysis focused on the relative effectiveness of each transit network in accommodating travel between minority/nonminority analysis zones and selected trip destinations (corresponding to the UMTA categories plus trips to downtown San Francisco and Oakland).

The findings of this analysis reflect BART's line-haul function for serving relatively long regional trips. As such, when substantially shorter trips (generally less than 3 miles) are "forced" onto BART, as was the case in this analysis, accessibility actually decreased relative to travel times for the same trips on local transit only. This is consistent with the fact that BART effectively serves longer distance, point-to-point travel, and substantially out-performs local transit on this basis. However, BART cannot compete with grid pattern, local transit for short trips (other than those with origins and destinations in the vicinity of a BART station). This "short-distance" bias inherent in this analysis, thus favored non-BART transit modes.

The results of this analysis in terms of accessibility and costs are summarized in Table II-7 below.

TABLE II-7
TITLE VI: ACCESSIBILITY AND FARE ANALYSIS

STANDARD TRIP CATEGORY (PURPOSE)	PERCENT OF ALL DESTINATIONS ACCESSIBLE WITHIN STANDARD TIME*		AVERAGE FARE (\$) **	
	MINORITY	NONMINORITY	MINORITY	NONMINORITY
Employment	40.8	41.6	0.60	0.52
Shopping	40.8	27.8	0.54	0.57
Hospitals	33.0	33.0	0.54	0.54
Social Services	18.4	25.3	0.50	0.50
Judicial Courts	40.3	16.7	0.56	0.50
Education	47.6	33.1	0.58	0.55
SF/OAK CBD	63.5	47.3	0.72	0.81

* Established by UMTA guidelines.

** Average fares reflect the fare schedule in effect during 1980.

FY 1983/84 OBJECTIVE STATUS

An analysis of women and minority hires during the first half of FY 1983/84 indicates that progress has been made for increasing women and minority workforce representation in accordance with the District's Affirmative Action Program. These gains are summarized in Table II-8 below.

Table II-8			
BART WORKFORCE REPRESENTATION FOR SELECTED JOB GROUPS			
JOB GROUP	POPULATION GROUP	JULY 1983	DEC 1983
Executives and Managers	Women	3.9%	5.8%
Supervisors (nontransportation)	Women	3.0%	7.3%
Supervisors (nontransportation)	Black	9.0%	10.1%
Engineers	Women	5.7%	6.7%
Professionals	Women	38.1%	39.5%
Professionals	Hispanic	5.4%	6.9%
BART Police Services	Women	15.3%	18.3%

As of the end of December 1983, the District workforce consisted of 2,217 full-time/active employees, of which 1,065 (48.0%) are minorities and 492 (21.1%) are women.

For federally assisted contracts, the District averaged 6.6% MBE participation during July-December 1983 versus a 20% objective. For all contracts, MBE participation was substantially higher, at 13.4%, but remains below the 20% objective.

FUTURE OUTLOOK

Workforce representation for women and other minority groups has improved within recent years with regard to overall percentages and distribution by job group. Efforts will need to continue to focus on realizing Affirmative Action Program objectives and timetables, as set forth in the June 1983 plan.

MBE participation for federally assisted contracts is well below the 20% objective. It is not anticipated that this objective will be achieved by year's end. Additional efforts will be needed to assure maximum MBE commitment with respect to the implementation of the C-car project as well as for other major capital projects. Performance for total contract MBE participation, while currently well below the 20% objective at 13.4%, could approach the desired level given modest gains during the second half of FY 1983/84.

PLANNED IMPROVEMENTS

Progress towards achieving workforce representation objectives is addressed in the District's Affirmative Action Plan which includes 13 major activities, twelve of which have already been initiated. The last one, an Employee Career Development Program, is to commence in July 1984.

PROGRAM AREA OBJECTIVES

The current SRTP objectives for the program area are identified in Figure II-11 below.

Figure II-11

AFFIRMATIVE ACTION PERFORMANCE OBJECTIVES

FY 1984/85

1. Achieve workforce representation objectives for women and minorities in accordance with the 1983 Affirmative Action Plan.
2. Encourage efforts to achieve 21% minority business enterprise participation for all District contracts determined to have MBE opportunities, with 18% DBE and 3% WBE participation for federally assisted contracts.

FY 1985/86 to FY 1988/89

1. Seek to achieve District objectives for workforce representation of minorities and women and for minority business enterprise contract activities.

PROGRAM AREA I: STATION AREA DEVELOPMENT

BART's Station Area Development Program is a commitment to the general concept of joint development. The key focus of this program is the identification and implementation of development opportunities to be pursued in conjunction with other public entities and/or private developers on BART-owned and surrounding property. The focus of the program is as follows:

- o To actively promote and assist in the creation of high quality, more intensive development on or near District-owned properties, with special focus on transit station areas.
- o To coordinate land use and transportation planning at the local and regional level in order to achieve land use patterns which support the substantial public investment represented by transit.
- o To enhance local community economic development efforts through better utilization of transit and transit-owned properties.

- o To return real property to the tax rolls and to increase the community tax base.
- o To help create new investment opportunities for the private sector.
- o To reduce auto use and traffic congestion through the encouragement of transit-linked development.

During the first two and a half years of program operations the District has undertaken a variety of pre-development planning efforts in preparation for marketing specific sites for development. These activities have included:

- o An analysis of risks and benefits associated with different approaches to disposition of BART property.
- o Development of implementation guidelines for Board adoption, including procedures for project packaging, station area planning, coordinating parking expansion and joint development, and MBE/WBE participation in the program.
- o Two joint development student design competitions focusing on the Oakland West, Coliseum, Walnut Creek, Pleasant Hill, Richmond, and Civic Center stations.
- o Cooperative planning efforts with local jurisdictions at Pleasant Hill, El Cerrito Plaza, and Walnut Creek, resulting in proposed and actual changes to general plans to allow for intensive development of BART station areas as well as formulation of design and development guidelines to be used in marketing properties.
- o Evaluation of an unsolicited proposal for a 230,000 square foot office project for the Lake Merritt Station, resulting in execution of a 12-month option agreement between the District and HSM Developers.

FY 1983/84 OBJECTIVE STATUS

Progress toward realizing the District's station area development objectives has been less than anticipated as the result of real estate market conditions beyond BART's control and the need to focus efforts to complete work relating to comprehensive program implementation guidelines and procedures. Further, two additional staff (in addition to the one full-time staff member currently working in this program area) were not hired as originally anticipated. Despite these limitations, the first phase of the Walnut Creek Station Area Study was completed during summer 1983, versus an objective to complete four station area plans by June 1984.

BART has not initiated the marketing of station area sites to date in accordance with the FY 1983/84 objective which states: Given favorable market conditions, market two station sites for development. However, the District is in the process of evaluating an unsolicited development proposal for Lake Merritt Station.

The District is also in the process of evaluating the effectiveness of the first two station area development design competitions. As a result, preliminary work for the third annual student competition (as specified in the FY 1983/84 station area development objectives) has been postponed until a determination is made regarding previous efforts in this area.

FUTURE OUTLOOK

For the remainder of FY 1983/84, station area development activities will continue to address the tasks for which work was initiated this fiscal year as discussed above. This includes the BART Board's adoption of Station Area Development Program Implementation Guidelines and Procedures; completion of an implementation strategy for the Pleasant Hill Specific Plan and execution of agreement with Contra Costa County regarding land transfers, infrastructure improvements, parking lot redesign, and future use of tax increment monies for parking expansion; completion of physical planning and design guidelines for BART owned sites, in preparation for issuing a Request for Proposal for the Pleasant Hill Station; adoption of a General Plan Amendment allowing intensive development of the Walnut Creek BART station properties; initiation of station area development planning activities at Richmond and Concord stations (assuming Board authorization); status evaluation of HSM office project at Lake Merritt Station; and completion of an evaluation of the first two station area development design competitions and formulation of recommendations to the Board regarding future competitions.

Looking beyond June 1984, station area development efforts will need to continue to identify and refine plans in concert with public and private developers in advance of continued strengthening of the economy and increasing development activity. Interest in the station area development program lies in the potential financial and patronage benefits that commercial and residential projects can bring to the District.

PLANNED IMPROVEMENTS

Station area development efforts within the current SRTP timeframe will focus on preparing a comprehensive assessment of BART's real property in order to increase the understanding of the value and marketability of air rights and land in the vicinity of stations.

A major thrust of the program is to establish the District's presence in the marketplace through ongoing cooperative efforts involving both the private and public sectors. Further, developments which may be realized in the longer term depend, in part, on how well preliminary planning efforts are carried out in the upcoming one to two years. These efforts will, therefore, continue to be an integral part of the District's station area development program in advance of marketing specific sites.

Efforts during the upcoming fiscal year will focus on the completion of the Walnut Creek Station Area Study and the selection of a proposal for development at this station as well as for Pleasant Hill; resolution of development options for Lake Merritt Station and possible negotiation of a development agreement; and, completion of development studies for Richmond and Concord Stations.

In terms of any near-term development activity, the proposed commercial development in the vicinity of Walnut Creek station appears to be the most likely project to be initiated first. Other proposed projects likely to be constructed within the current SRTP timeframe include those for Pleasant Hill and Concord.

PROGRAM AREA OBJECTIVES

Updated performance objectives for the station area development program are identified in Figure II-12 below.

Figure II-12

STATION AREA DEVELOPMENT PERFORMANCE OBJECTIVES

FY 1984/85

1. Complete predevelopment planning at Pleasant Hill and Walnut Creek.
2. Initiate a station area development plan for the Richmond Station.
3. Assuming completion of predevelopment planning and favorable market conditions, prepare and issue Requests for Proposals (RFP's) for projects at Walnut Creek and Pleasant Hill.

FY 1985/86 to FY 1988/89

1. Continue to work with local jurisdictions in developing station specific plans.

Figure II-13
(pages II-55 to II-62)

PRIORITY CAPITAL PROJECTS

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PRIMARY PROGRAM AREA IMPACTS

PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY			A: PATRONAGE PROMOTION	B: BASIC SYSTEM SERVICE	C: EXTENSION SERVICE	D: SYSTEM ACCESS	E: RELIABILITY	F: SAFETY & SECURITY	G: FINANCIAL EFFICIENCY	H: AFFIRMATIVE ACTION	I: STATION DEVELOPMENT
PROJECT NUMBER	PROJECT TITLE & MILESTONE	COMPLETION DATE									
01TC	EXPAND SVC PIT/ADD COVER-HHT	08-84									
44DB	REPLACE AFC EQUIP. COMPONENTS	08-84									
91FC	EMERG VENTILATION-OAK WYE(KWY)	08-84									
051D	50-SP-SFRR PARKG EXPAN-CPS(IV)	08-84									
05KG	50-SP-SFRR PARKG EXPAN-CNS(II)	08-84									
030S	NEW STOREROOM (OCY)	09-84									
20FE	PERMANENT B-POINTS	09-84									
15AY	FAN CONTROL SAFETY ENCLOSURES	10-84									
79---	REPL MAINT EQ (82/4)	10-84									
15FE	TRACTION POWER GROUND RELAYS	11-84									
15NE	TEXTURED PLATFORM EDGE/HANDICAP	11-84									
271C	FIRE PHONES (DHT)	12-84									
41JG	NEW DBL POSITIV PLATE EATERIES	12-84									
0--KE	PARKING CAPACITY EXPANSION	12-84									

PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY			A: PATRONAGE PROMOTION	B: BASIC SYSTEM SERVICE	C: EXTENSION SERVICE	D: SYSTEM ACCESS	E: RELIABILITY	F: SAFETY & SECURITY	G: FINANCIAL EFFICIENCY	H: AFFIRMATIVE ACTION	I: STATION DEVELOPMENT
PROJECT NUMBER	PROJECT TITLE & MILESTONE	COMPLETION DATE									
15AK6	EMPLOYEE BREAKROOMS AT STATIONS	12-84							●		
15CL	RAIL REPLACEMENT PH 1&II (82/4)	12-84		●							
15CL	RAIL REPL PH III & IV (84/6)	12-84		●							
20BF	TIMELocking MODS	12-84					●	●			
41BK	REPLACE PCB-FILLED CAPACITORS	12-84									
45CB	"B" RETROFIT - CUBIC AFC	12-84		●			●				
45CI	60-CENT MIN FARE-CUEIC VENDURS	12-84						●			
45DA	REPAIR & REDESIGN TKT. ENCDRS	12-84					●				
91FD	UNDERGRD VENTILATN SYD-Y-SYSTHWD	12-84						●			
41BH	MOTOR REWIND UPGRADE	01-85					●				
01WD	TRANSFER INFORMATN CENTER(FMS)	02-85	●			●					
03CE6	STRENGTHEN OVER-XINGS	02-85		●			●	●			
270B6	RADCOM	03-85		●			●				
03RC	TRANSFER INFORMATN CENTER(CDS)	03-85	●								
27BB	COMMUNICATNS CABLE NETWORK-CCN	05-85		●		●	●				

PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY			A: PATRONAGE PROMOTION	B: BASIC SYSTEM SERVICE	C: EXTENSION SERVICE	D: SYSTEM ACCESS	E: RELIABILITY	F: SAFETY & SECURITY	G: FINANCIAL EFFICIENCY	H: AFFIRMATIVE ACTION	I: STATION DEVELOPMENT
PROJECT NUMBER	PROJECT TITLE & MILESTONE	COMPLETION DATE									
41EB	1. ANDRAILS (VESTIBULE)	06-85									
41EI	2. VEHICLE FIRE HARDENING	06-85									
15NF	3. SECONDARY BOOTH ELEV CONTROLS	06-85									
64---	4. REPLACE MGMT INFO SYS - MIS	06-85									
15N-	5. PH IV SYSTM ACCESSIBILITY IMP	06-85									
07CD-110	6. KE TRACK WORK & ELECT & T.C.	07-85									
41BG	7. BRAKE GRID HEAT SHIELDS	07-85									
11FH	8. STA VENTILATN FAN CONTROL MODS	09-85									
79B-	9. REPL COVERAGE SEC/MNT VEH (82/4)	09-85									
07CB&CC	10. KE TRACK (KET)	11-85									
03FD	11. FIRE MAIN MODIFICATIONS(BHT)	01-86									
45AH	12. AC/BART/MUNI SUPER PASS	01-86									
03CG	13. MET STANDPIPE WALNUT CK TUNNEL	02-86									
03FK	14. 2ND PWR TRANSFORMER/E.PCRTL-BHT	03-86									
42CA	15. NEW VEHICLE ATC-PREPRODUCTION	04-86									

PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY			A: PATRONAGE PROMOTION	B: BASIC SYSTEM SERVICE	C: EXTENSION SERVICE	D: SYSTEM ACCESS	E: RELIABILITY	F: SAFETY & SECURITY	G: FINANCIAL EFFICIENCY	H: AFFIRMATIVE ACTION	I: STATION DEVELOPMENT
PROJECT NUMBER	PROJECT TITLE & MILESTONE	COMPLETION DATE									
61--	INTEGRATED CONTROL SYSTEM - ICS	07-86									
03NE	1200-SP. WEST LOT EXPANS-PHS (1)	07-86									
09FE	IRPLC PCB TRANSFERMER & SF VENT	11-86									
11RD2	ICALY CITY TURNBACK PROJECT	05-87									
42--	2ND GEN TRANSIT VEHICLES/ATC	05-87									
42AA2	150 2ND GEN TRANS VEH W/PRO ATC	05-87									
79B-	REPL OVERAGE SED/MNT VEH (84/6)	09-87									
11SD2	DALY CITY YARD PROJECT	11-87									
0-B-2	EXTENSIONS R.C.W. ACQUISITION	06-97									

PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY			A: PATRONAGE PROMOTION	B: BASIC SYSTEM SERVICE	C: EXTENSION SERVICE	D: SYSTEM ACCESS	E: RELIABILITY	F: SAFETY & SECURITY	G: FINANCIAL EFFICIENCY	H: AFFIRMATIVE ACTION	I: STATION DEVELOPMENT
PROJECT NUMBER	PROJECT TITLE & MILESTONE	COMPLETION DATE									
15AZ	WET STANDPIPE & FD CONNS-21 STA	TBD									
15EG	ELECTRICAL CAPACITY INCREASE	TBD									
20AD	E-O-LINE MAKES & BREAKS	TBD									
20AE	NON E-O-LINE MAKES & BREAKS	TBD									
XXXX	WAYSIDE ATC MODS	TBD									
XXXX	NEW FURNITURE/EQUIPMENT -RAF	TBD									
01MG	200-SP SOUTH PKG EXPAN-BFS(IV)	TBD									
01QE	520-SPACE PARKG EXPAN-SHS (IV)	TBD									
01XG	PERM IMPS/CALTRANS LOT-FMS(1)	TBD									
02AC	ALT ANALYSIS & EIR/MX-LINE	TBD									
03JE	PERM IMPVT/CALTRANS LOT-LAS (II)	TBD									
03LG	FRINGE PKG FACILITY -WCS (I)	TBD									
04AC	EIR & PREL ENGRG/P-LINE PH I	TBD									
04DA	EUS STAIN PARKRIDE LOT-NCM(XR)	TBD									
04GA	200-SPACE BAILEY ROAD LOT-ANS	TBD									

PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY			A: PATRONS PROMOTION	B: BASIC SYSTEM SERVICE	C: EXTENSION SERVICE	D: SYSTEM ACCESS	E: RELIABILITY	F: SAFETY & SECURITY	G: FINANCIAL EFFICIENCY	H: AFFIRMATIVE ACTION	I: STATION DEVELOPMENT
PROJECT NUMBER	PROJECT TITLE & MILESTONE	COMPLETION DATE									
04MA	1200-SP. HILLCREST AVE LOT-ANS	TBD	●		●	●		●			
11ED	1100-SPACE PARKING EXFAN-CWS(II)	TBD	●			●					
11FG	12 END STAIRWAYS-PLATF/VEZZ-EMS	TBD						●			
15CL	1RAIL REPL PH V (86/77)	TBD		●				●			
15N-6	1PH II SYSTM ACCESSIBILITY IMP	TBD	●			●					
15NG	1SELF OPERATOR-ELEVATORS/HNDICPD	TBD	●			●		●			
20AC	1ELIMINATE STATION INTERFACES	TBD	●	●			●				
20BC	1MISC WAYSIDE MODIFICATIONS	TBD		●					●		
20HU	1ADD'L STATION ESSENTIAL POWER	TBD		●			●				
27QB	1PLATFORM PA EXT ABOVE GRD STAS	TBD		●							
41GB	12ND GENERATION ATO/136 A-CARS	TBD									
44AB	1AUTOMATIC TELLERS STUDY	TBD	●						●		
44CD	1PRE-ENCODED TICKET DISPENSERS	TBD							●		
45AC	1EXPAND AFC DAS CAPABILITY	TBD							●		
79--	1REPL MAINT EQ (84/6)	TBD							●		

PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY			A: PATRONAGE PROMOTION	B: BASIC SYSTEM SERVICE	C: EXTENSION SERVICE	D: SYSTEM ACCESS	E: RELIABILITY	F: SAFETY & SECURITY	G: FINANCIAL EFFICIENCY	H: AFFIRMATIVE ACTION	I: STATION DEVELOPMENT
PROJECT NUMBER	PROJECT TITLE & MILESTONE	COMPLETION DATE									
98DD	REGIONAL EMERGENCY TRAINING PROGRAM	TBD									
XXXX	AERIAL BARRIERS- PH I&II	TBD									
XXXX	SYSTEM SAFETY UPGRADE-PH II IREM	TBD									
XXXX	COURTESY PHONE BACKUP AND CAPAB	TBD									
01EE	435-SP PRK FAC-LMS	TBD									
01GG	ALAMEDA PARKRIDE LOT FVS	TBD									
01QF	75-SP PKG LOT REDESIGN-SHS(IV)	TBD									
01UD	IMPRVD BUS WAITING AREA-UCS(II)	TBD									
01VD	BUS/RAIL INTERFACE IMP-S-UCS (II)	TBD									
01VG	500-SPACE SATELLITE LOT-UCS(II)	TBD									
03NC	SO. PAC. RR ROW PKG LOT - PHS(II)	TBD									
05MD	COMPLETE WEST END OF LOT (RIS)	TBD									
110D	BUS/KISS-RIDE IMPVTS - BPS (II)	TBD									
110F	MIDDAY/KISS-RIDE LOT -EPS (II)	TBD									
27RB	PLATFORM CCTV-DOWNTOWN STAINS	TBD									

PRIORITY CAPITAL PROJECTS: PRIMARY PROGRAM AREA IMPACT

CAPITAL PROJECT SUMMARY			A: PATRONGAGE PROMOTION	B: BASIC SYSTEM SERVICE	C: EXTENSION SERVICE	D: SYSTEM ACCESS	E: RELIABILITY	F: SAFETY & SECURITY	G: FINANCIAL EFFICIENCY	H: AFFIRMATIVE ACTION	I: STATION DEVELOPMENT
PROJECT NUMBER	PROJECT TITLE & MILESTONE	COMPLETION DATE									
79--	REPL MAINT EQ (86/8)	TBD									
79--	REPL MAINT EQ (88/90)	TBD									
79B-	REPL OVERAGE SED/MNT VEH(86/8)	TBD									
79B-	REPL OVERAGE SED/MNT VEH(88/90)	TBD									
0---6	PART SYSTEM EXTENSIONS	TBD									
15N-3	PH III SYSTM ACCESSIBILITY IMPVS	TBD									
17B0	GENL OFC RELOCATIONS(1584)-LMA	TBD									
41EK	RESTORE CAR EXTEIOR SURFACES	TBD									

CHAPTER III

FIVE YEAR FINANCIAL PLAN

Given the foregoing identification of specific performance objectives for the five-year period, it is the purpose of this chapter to identify the financial requirements for implementing proposed improvements and service expansion, to highlight problems limiting implementation, and to recommend feasible solutions in the form of a five-year financial plan. This chapter is comprised of two sections, focusing first on the operating budget projections and then on capital budget projections. Underlying assumptions are presented within each of these sections. Summary financial projections are then shown in tabular form. Problems resulting from the projections are highlighted and proposed solutions discussed.

FIVE-YEAR OPERATING BUDGET PROJECTIONS

The District's five-year operating budget projections are based on the FY 1984/85 adopted budget. The District's five-year operating budget plan appears in Table III-1.

FY 1984/85 OPERATING BUDGET

The adopted operating budget for FY 1984/85 was developed to meet the previously described goals and objectives.

The budget anticipates net fare revenues of \$68.1 million with a farebox ratio of 45.6%, and other operating revenues of \$6.6 million, resulting in an operating ratio of 50.0%.

Property Tax receipts are estimated at \$5.5 million, and Sales Tax receipts are forecast at \$76.1 million.

Operating Expenses are anticipated to increase by \$6.8 million (4.8%) over the FY 1983/84 budget with a total of \$149.7 million for the year.

The largest increase, \$3.9 million, (3.9%), is expected in net labor cost. Labor cost is based primarily on contractual wage and salary increases, plus the increased cost of providing existing fringe benefits. Approximately \$0.5 million of this increase is due to the planned expansion of peak and offpeak service as noted above.

Total nonlabor cost is expected to increase by \$2.9 million (6.9%), as follows. The cost of the Express Bus and Shuttle Program is expected to increase by \$0.9 million. New initiatives to make this program more financially effective are expected to commence during FY 1984/85.

Traction/Station Power cost is expected to be \$0.6 million higher than the cost budgeted for FY 1983/84 based on a new rate structure which is expected to be upheld by a forthcoming PUC decision. As a result of a petition by PG&E, BART may be billed for energy as a part of the "large light and power" classification instead of the previous more favorable category. This decision, if upheld, will tend to increase BART power costs. Of the projected increase, about \$0.2 million is for expanded service. Other nonlabor expense is expected to increase by \$1.4 million, of which \$0.5 million is associated with new service.

Table III-1

FIVE YEAR OPERATING BUDGET PLAN, FY 84/85 - FY 88/89
CURRENT AND EXPANDED SERVICE
(000's)

REVENUES	Actual 1982/83	Budgeted 1983/84	Budgeted 1984/85	Projected 1985/86	Projected 1986/87	Projected 1987/88	Projected 1988/89
Net Rail Revenues, Constrained Normal Growth, Current Fares	\$59,766	\$64,900	\$66,252	\$68,994	\$70,986	\$74,158	\$76,284
Net Rail Revenues, Expanded Service @ Current Fares	0	0	748	3,758	6,344	9,403	12,025
Fare Increase Proceeds, Constrained Normal Growth	0	0	0	11,588	11,888	12,427	12,406
Fare Increase Proceeds, Expanded Service	1,199	1,100	1,150	630	1,063	1,576	3,403
Express Bus Revenues				1,249	1,311	1,307	1,406
Net Passenger Revenue	61,965	66,000	68,150	86,189	91,602	98,941	115,284
Other Operating Revenue	5,618	5,370	6,574	5,500	5,000	5,000	5,100
Net Operating Revenues	\$66,583	\$71,370	\$74,724	\$91,689	\$96,602	\$103,941	\$120,284
EXPENSES							
Net Labor: 83/84 Base + Expanded Base	88,000	99,218	103,182	111,230	119,220	129,663	140,931
Net Labor: Expanded Service		48	607	4,211	6,784	10,061	14,817
Electric Power: Traction & Station	14,815	17,177	17,691	19,733	20,103	23,288	26,483
Express Bus: Traction, Expanded Service		0	228	714	2,141	907	1,917
Farebox Fuel & Shuttle	7,416	7,416	8,350	9,273	9,968	10,716	11,520
Other Nonlabor: Base + Expanded Base	14,960	18,466	19,710	20,838	22,344	24,038	25,896
Other Nonlabor: Expanded Service		0	151	1,006	1,755	2,992	3,740
Total Operating Expenses	\$125,281	\$142,834	\$149,719	\$167,103	\$182,963	\$201,715	\$224,944
OPERATING DEFICIT	(50,698)	(71,434)	(74,995)	(75,314)	(86,361)	(97,774)	(104,660)
FINANCIAL ASSISTANCE							
Property Tax Revenues	5,068	5,500	5,500	5,940	6,415	6,928	7,483
Sales Tax Revenues (BART 75% Share)	62,948	66,700	76,129	82,600	89,621	97,239	105,504
STA ("BART Only")	3,000	1,937	540	540	543	630	680
STA ("BART Only")	2,439	5,036	3,600	5,700	5,700	5,700	5,700
Capital and Other Allocations	(15,246)	(12,247)	(14,120)	(19,474)	(15,983)	(14,593)	(14,736)
Total Financial Assistance	\$38,109	\$66,995	\$71,609	\$75,336	\$86,336	\$95,904	\$104,611
NET FINANCIAL RESULT	(509)	(4,509) ¹	(3,386) ²	(6)	(25)	(1,870) ²	(49)
NET OPERATING RESERVE							
Beginning Balance	6,336	5,747	5,747	5,747	5,739	5,715	5,715
Ending Balance	\$5,747	\$5,747	\$5,747	\$5,739	\$5,715	\$5,715	\$5,665
FINANCIAL INDICATORS							
Farebox Ratio: Current Service Level	49.1%	46.2%	45.3%	50.0%	48.0%	46.1%	48.1%
Farebox Ratio: Incremental Service	---	---	81.4%	74.0%	72.0%	70.6%	75.5%
Farebox Ratio: Existing and New Service	49.1%	46.2%	45.6%	51.6%	50.1%	49.0%	51.3%
Operating Ratio	53.6%	50.0%	50.0%	59.9%	52.0%	51.5%	53.5%
Rail Cost per Passenger Mile	\$0.163	\$0.181	\$0.181	\$0.186	\$0.191	\$0.196	\$0.201

¹ Projected actual results are expected to be favorable because of lower than budget expenditures and higher than anticipated revenues.

² The District will endeavor to make up the remaining deficit during the year through further efficiencies, stringent cost control efforts, and stimulation of additional ridership beyond that forecast.

BART's overall sources of funding which can be applied to the operating budget exceed estimated expenses. However, as called for in last year's Short Range Transit Plan, certain capital expenditures are also to be funded from these fund sources. Capital Allocations totaling \$14.1 million are budgeted for Improvement Allowance (\$2.9 million), Revenue Bond Debt Service (\$6.8 million), Right of Way purchases (\$2.0 million), Planning and Station Area Development (\$0.4 million), and a new item this year, Parking Facility Construction (\$2.0 million). In view of increasing parking requirements and the diminishing availability of federal, state or regional funds for this purpose, proposed BART funding at this level is essential to provide additional capacity.

Expected receipts of financial assistance through MTC, of \$3.6 million SB 1335 (STA) and \$0.5 million TDA funds are not sufficient to balance the overall budget, when the capital items are taken into account. District efforts will focus on covering the remaining deficit of \$3.4 million during the year through additional productivity improvements, stringent cost control, and stimulation of additional ridership.

ANTICIPATED GROWTH RATES

Beyond FY 1983/84, the District's financial condition will be determined by how well future revenue growth keeps pace with increases in operating expense. This section describes the assumptions on which the updated five-year financial plan is based.

Labor is the most significant element of operating costs at 69.2% with all non-labor costs comprising only 30.8%. The operating budget plan in Table III-1 identifies two components of labor expense, the current base and that which is required for expanded service. The base includes those positions which are needed to maintain current service. Over the five-year period, some new positions will have to be added for this purpose. However, most of the increase in the base reflects the cost of anticipated improvements in wages and benefits as covered by two new contracts which are to be negotiated during this five-year cycle. Maintaining current employee benefits over the five year period and providing the additional positions needed to continue existing service are also included. The increased cost of these three factors is expected to average 8.1% per year.

Non-labor expense includes two major items, electric power and purchased transportation (express bus and shuttle service), and a variety of other lesser items.

The forecasting of future power cost increases is subject to a considerable degree of uncertainty given the large number of influencing factors. These include decisions made at the State and Federal levels concerning atomic power plant certification and international political developments which affect the price and/or availability of oil. Another significant factor is the magnitude of rainfall and thus available hydroelectric resources. The power cost associated with maintaining the current level of service (29,485,000 annual vehicle miles) is expected to increase by 10.3% per year.

It is anticipated that the Express Bus program will be modified during the coming five-year period to improve its financial effectiveness. At this point, however, it is not clear what the financial impact will be of improved operating performance. Operating costs are projected to increase by an average of 8.4% per year.

The incremental power cost of planned service expansions is shown in Table III-1. All other nonlabor expense items are expected to increase by an average of 7.5% annually.

BART passenger revenue growth depends on projected rail patronage trends. As noted above, capacity limitations on two of the four routes may have an inhibiting effect on peak period patronage growth until significant service expansion occurs. Likewise, the proposed marketing program is yet to be fully implemented. Therefore, only a modest increase in offpeak ridership is forecast during the first few years of the planning cycle until off-peak access to the system can be improved. Other operating revenue is expected to be somewhat higher in FY 1984/85 than forecast last year because of increased interest earnings on higher fund balances.

For the upcoming five-year period, BART sources of financial assistance are forecast to grow at higher rates than last year's plan assumed. This forecast has been updated based on an improved economic outlook for the period. Property tax revenues are expected to increase by 8.0% annually while sales tax yields are projected to expand by 8.5% per year.

Discretionary financial assistance which is allocated to BART by MTC is likewise projected at somewhat higher levels in this year's short-range plan, based on the preliminary allocation estimate furnished earlier this year. This estimate calls for \$3.6 million of STA funds and \$0.5 million of TDA funds. For purposes of the current financial plan, STA funding is assumed to continue at \$5.7 million annually after FY 84/85, while TDA funds are expected to grow at the rate indicated above for BART sales tax revenues.

ADDITIONAL STAFFING REQUIREMENTS

In preparation for the planned increases in service capacity, BART will need to begin expanding its current staffing level to support this change. Most of the increase will occur in the operations departments as the District takes delivery of new revenue vehicles, expands to provide appropriate maintenance, and ultimately puts more cars and trains on line during peak periods. A few additional positions will be required in administrative and support departments, due to the increased workload produced by increased cash handling volume and new marketing programs.

Table III-2 summarizes new hiring requirements for the five-year period as projected by appropriate departments. The largest increases are in Rolling Stock Maintenance and Train Operations. As expected, staffing increases in these departments will be required in anticipation of receipt of the new revenue vehicles and with sufficient lead time for training prior to inauguration of expanded peak period train service.

FIVE-YEAR OPERATING BUDGET PLAN

The five-year operating budget plan is summarized in Table III-1. Also shown is the FY 1983/84 operating budget. This budget anticipated a \$4.5 million deficit. It was expected and intended to eliminate most of this deficit by efficiencies, stringent cost control efforts and stimulation of additional ridership. At this time financial performance for FY 1983/84 is better than expected. It would appear that more favorable performance is likely through the balance of this fiscal year. The figures for FY 1984/85 match those in the adopted District operating budget. In this presentation, an estimated year-end result is shown for each year. The bottom line represents the District's ending balance in its net operating reserve, or working capital. District financial operations require that this reserve be maintained at or above \$5 million.

Table III-2

PROJECTED REQUIREMENTS FOR ADDITIONAL POSITIONS
 FY 1984/85 - FY 1989/90
 (As of June 30th)

<u>D E P A R T M E N T</u>	<u>F I S C A L Y E A R</u>						<u>6 Year S/T</u>
	<u>84/85</u>	<u>85/86</u>	<u>86/87</u>	<u>87/88</u>	<u>88/89</u>	<u>89/90</u>	
General Manager							
Legal							
Finance	3	13	2	7		1	26
District Secretary							
Planning & Analysis							
Public Affairs		1			1		2
Safety							
Employee Relations	-10 ^a						-10
Affirmative Action	1						1
Budget & Capital Program Control							
Materials Management & Procurement	1	3			9		13
Information Systems	1						1
Administrative Services							
TOTAL ADMINISTRATIVE & SUPPORT DEPARTMENTS	-4	17	2	7	10	1	33
<u>Maintenance & Engineering</u>	35	36	3	27	24	2	127
Administration							
Maintenance Support	2 ^b				2		4
Communications & Component Repair	8 ^c	8	1	4	1	2	24
Rolling Stock Maintenance	23 ^d	12	2	5	16		58
Power & Way Maintenance	2	16		18	5		41
Engineering & Construction							
<u>Field Services</u>	11	14	10	12	36	33	116
Administration-Support & Analysis	1						1
Train Operations	9 ^e	10		12	32	29	92
Station Operations		4			4	4	12
Police Services	1		10				11
TOTAL OPERATIONS DEPARTMENTS	46	50	13	39	60	35	243
TOTAL DISTRICT	42	67	15	46	70	36	276
CUMULATIVE INCREASE	42	109	124	170	240	276	276

- Reflects completion of Electronic and Transit Vehicle Mechanic Training Program and absorption of these trainees into the Maintenance workforce. Program may be continued in future years.
- These positions are to be capitalized during FY 1984/85 as part of the C-car program.
- Four positions to be capitalized per C-car program.
- Reflects net of 24 capitalized positions per C-car program and reduction of one other.
- Includes two capitalized positions per C-car program.

As stated previously, the District will endeavor to make up the estimated deficit of \$3.4 million during the year through further efficiencies, stringent cost control efforts, and stimulation of additional ridership beyond that forecasted.

The five-year operating budget plan shown in Table III-1 identifies a need to increase fares in FY 1985/86 and again three years later in FY 1988/89. The required increases are on the order of 20%. A fare increase of 30% in FY 1985/86 was anticipated in last year's short-range plan. Although this fare increase appears not to be as great as previously thought, it is clear that such an increase will be necessary in FY 1985/86 unless the District's financial situation changes markedly.

The outlook for increased levels of financial assistance is not promising at this time. Budget requirements at both State and Federal levels are especially challenging and new tax initiatives are not likely to be realized. With this outlook, cutbacks in financial assistance funds are a distinct possibility.

Therefore, a fare increase of 20% will be necessary in FY 1985/86 to generate sufficient additional operating funds in the ensuing three years. Another fare increase is considered necessary in the middle of the last year of the planning cycle.

The plan assumes that the revenue bond debt service requirements will be funded each year by an allocation from the operating budget. This and other debt service requirements are summarized in Table III-3.

Table III-3

FIVE-YEAR PLAN DEBT SERVICE SUMMARY
(000)

	<u>FY 83/84</u>	<u>FY 84/85</u>	<u>FY 85/86</u>	<u>FY 86/87</u>	<u>FY 87/88</u>	<u>FY 88/89</u>
<u>Debt Service Expense</u>						
General Obligation Bond Interest Redemption	52,715	53,152	53,840	54,218	54,737	55,200
SSD #1 Bond Interest and Redemption	738	741	734	735	736	740
Revenue Bond Debt Service	<u>6,800</u>	<u>6,819</u>	<u>6,844</u>	<u>6,873</u>	<u>6,900</u>	<u>6,925</u>
Total Debt Service Requirements	\$60,253	\$60,712	\$61,418	\$61,826	\$62,373	\$62,865
<u>Sources of Funds</u>						
General Obligation Bond Interest and Redemption Fund	52,715	53,152	53,840	54,218	54,737	55,200
SSD #1 Bond Interest and Redemption Fund	738	741	734	735	736	740
Allocation from Operating Budget for Revenue Bond Debt Service	<u>6,800</u>	<u>6,819</u>	<u>6,844</u>	<u>6,873</u>	<u>6,900</u>	<u>6,925</u>
Total Sources of Funds	\$60,253	\$60,712	\$61,418	\$61,826	\$62,373	\$62,865

FIVE-YEAR CAPITAL BUDGET PROJECTIONS

The District's capital program is the primary means for achieving expanded BART capacity and service level objectives. The process through which the program is financed is a major aspect of BART financial planning involving not only a number of federal, state, and local grant sources, but BART's operating budget and reserves. The following sections describe the financial requirements for BART's capital program along with existing and projected sources of funding. An assessment of the adequacy of funds is also presented.

The focus of the analysis is on changes from the previous short-range transit plan. The major change since the previous year has been the MTC adoption of a New Rail Transit Starts and Extensions Program. This year's SRTP reflects this program and policy decisions made by the BART Board. This event has a significant impact on capital plan financing.

PROGRAM FINANCIAL REQUIREMENTS

The first step in describing financial requirements is to update cash flow estimates for all projects contained in BART's program. Estimates of annual cash requirements (cash flows) are developed by the project's sponsoring department. The fund source information (fund splits) for funded projects is based on past grant actions and reviewed by Capital Program Control. Generally, fund source projections for unfunded projects are based on BART's latest submission to the MTC Transportation Improvement Program (TIP) priority process.

BART's five-year funded and unfunded capital program is presented in Tables III-4 and III-5 beginning on pages III-11 and III-16, respectively. These tables list all capital projects, their estimated costs, and annual expenditure projections (cash flows). For the unfunded projects, the estimated cost is shown in one of the program year columns, which indicates the year fund applications will be submitted. Partially funded projects appear in both tables. For these projects, the sum of the funded budget and the estimated unfunded portion equals the total project cost. System extensions are also shown in the tables. Funded and unfunded cash flows by funding source are summarized in Tables III-6 and III-7 on pages III-19 and III-20, respectively.

PROJECTED SOURCES

The federal "Gas Tax" legislation of 1982 substantially modified the federal role in capital assistance. Section 3 funds are now targeted for major transit improvements and the federal share reduced to 75% of project cost. A new Section 9 program for more routine capital items is provided through formula grants to local jurisdictions. BART's split of projects between Sections 3 and 9 is based upon the capital priorities process conducted by the Metropolitan Transportation Commission. Section 3 funds are assumed for 90 new transit vehicles as well as a share of the Daly City Project. The funds shown are as requested in recent letters to UMTA and presentations to the Congressional delegation. They also reflect the Letter of Intent for the transit vehicles.

State and Federal funding availability is based upon the estimates provided by MTC. MTC allocated bridge tolls are assumed to be available at the rate of \$3 million per year.

Available BART capital reserves are also identified along with estimated interest earnings with interest calculated on an annual basis. In each year, funded cash flows are drawn down from the starting balance of each reserve source. The interest earned on the resulting balance accrues to that account. Simple interest is calculated at a 9% annual rate. The Revenue Bond Construction Fund includes the proceeds of the 1982 Sales Tax Revenue Bond sale. BART Reserves contribute a significant amount to the Daly City Turnback. In addition, reserves contribute part of the local match for the New Transit Vehicles.

A final element in the capital financial picture is the linkage to the annual operating budget. This connection has two elements:

- o The annual budget includes capital and other allocations for revenue bond debt service, improvement allowance, extension right-of-way acquisition, and planning and station area development.
- o During certain years of the five-year period, transfers from capital reserves are necessary to provide sufficient funds to meet annual budget needs. Such transfers are largest in years just before a projected fare increase.

Projection of grant funding is subject to considerable uncertainty. Availability of federal funding is based upon the assumption that Section 9 will be appropriated as authorized, and BART will receive the same share programmed for FY 1983/84 except in the out years where project needs are less clearly defined. Section 3 funds are assumed as required for the transit vehicle and Daly City projects. Substantial uncertainty must be attached to state guideway funding due to California's recent turn toward more emphasis on highway and major projects in Southern California.

CAPITAL FUNDING ADEQUACY

Given the funding assumptions discussed, a comparison with capital requirements is shown in Table III-8 on pages III-21 and III-22. The table shows the aggregate need and projected availability by source for each year in the current planning period.

Because of their magnitude and financial complexity, additional detail is provided in Tables III-9, III-10, and III-11 beginning on page III-23 for the Daly City Turnback and Yard, the New Transit Vehicles, and the BART Extensions.

It will be necessary to receive assistance from each level of government in order to fund the extension program. Since federal funds are in short supply, a strong commitment for state and local funding is important to demonstrate local support to federal decision makers. As seen in Table III-11, the BART Extensions are planned on the basis of fifty percent federal funding, twenty-five percent state funding, and twenty-five percent local funding.

The impact of this financial plan upon BART's capital reserves is shown in Table III-12 on page III-26.

CONCLUSION

Overall, it can be concluded that the basic set of projects (excluding extensions) shown in this plan is achievable within projected levels of available funding. There is a major shortfall of funding projected at the Federal level in Section 3 funds. The bulk of this shortfall is associated with the extension program. A major commitment of federal, state and local funds will be required.

Finally, the plan shows a reserve of approximately \$8.6 million being available as a contingency. This is deemed to be a reasonable reserve given the uncertainties of interest rate assumptions, inflation, fund sources, and potential transfers to the operating budget, along with potentially significant start-up and safety issues which may appear as BART transitions to higher service levels in the mid-1980's.

Table III-4:

FMS No.	PROJECT NAME	FUNDING BUDGET	TEST-EXP. 11/9	CASH FLOWS 11/9	84/85	85/86	86/87	87/88	88/89	WIS
	GROUP: VEHICLE									
41PH	MOTOR REWIND UPGRADE	6794	5500	1284	0	0	0	0	0	0
41SJ	BUKAKE RELAY LOGIC MOD-OVERLOAD	161	161	0	0	0	0	0	0	0
41EG	TRANSIT VEHICLE FIREHARDENING	20583	4000	8787	6583	200	0	0	0	1013
41JG	NEW ORL POSITIV PLATE BATTERIES	770	370	400	0	0	0	0	0	0
42AA	150 2ND GEN TRANS VEH W/ FRO ATC	16865	3197	13207	67965	84716	0	0	0	0
42CA	INEX VEHICLE ATC - PREPRODUCTION	3354	1300	2054	0	0	0	0	0	0
44DB	REPLACE AFC EQUIP COMPONENTS	135	0	135	0	0	0	0	0	0
	GROUP: FACILITIES MAINLINE									
10JEE	STRENGTHEN OVERSINKINGS	710	40	260	0	0	0	0	0	410
10JCG	EARTHQUAKE REPAVIALOR STUDY	100	80	20	0	0	0	0	0	0
10JFD	FIRE MAIN MODIFICATIONS (BPT)	314	0	0	0	0	0	0	0	334
10JFH	EL PORTAL DOORS-ESM IMPVTS (BHT)	197	197	0	0	0	0	0	0	0
10JAC	ELR & PELL ENRG/P-LINE PF 1	320	25	295	0	0	0	0	0	0
10JAD	W. CENTRA COSTA EXTENSION STUDY	70	70	0	0	0	0	0	0	0
10JCE	LINE TRACK (NET)	23556	18400	4556	1000	0	0	0	0	0
10JAB	L-LINE EXT. STUDIES(LIV-PLAS)	78	78	0	0	0	0	0	0	0
11JRD	DAILY CITY-TIMEBACK	24724	4009	10714	6550	3010	350	0	0	0
11JSD	DAILY CITY-YARD	8572	50	3267	3142	357	1756	0	0	0
11JAW	ADDITIONAL MILEPOST SIGNS	200	200	0	0	0	0	0	0	0
11JAY	FAN CONTROL SAFETY ENCLOSURES	231	231	0	0	0	0	0	0	0
11JFD	UNDERCRO VENTILATN SYS-SYSTEMD	35	0	35	0	0	0	0	0	0
19902	EXTENSIONS R.O.W. ACQUISITION	10377	4000	4777	0	0	0	0	0	0

Table III-4 (continued): NAHJ FIVE-YEAR FUNDED CAPITAL PROGRAM (1X1700)

FMS NO.	PROJECT NAME	FUND BUDGET	FST-EXP. 11/1/86	CASH FLOWS 52/85	85/86	86/87	87/88	88/89	91-5
	GROUP: FACILITIES & ACCESS								
101V	PARKING CAPACITY EXPANSION-UCS	25	0	25	0	0	0	0	0
101W	TRANSFER INFORMATION CENTER-FMS	0	0	0	0	0	0	0	95
103G	TWT STANDPIPE WALNUT CR TUNNEL	125	0	45	40	0	0	0	0
103C	TRANSFER INFORMATION CENTER(CDS)	455	50	405	0	0	0	0	0
103D	SACTC NO RR ROW PKG LOT-CEE(1)	635	235	0	0	0	0	0	0
104A	DUSS STAIN PARKSIDE LOT-NCX(RH)	1308	70	728	450	0	0	0	0
111H	STA VENTILATION FAN CONTROL MODS	142	0	0	0	0	0	0	142
111B	ADDD DUS SHELTERS - DCS(1V)	308	308	0	0	0	0	0	0
115AKG	EMPLOYEE BREAKROOMS AT STATIONS	96	16	80	0	0	0	0	0
115N-6	PH 11 SYSTEM ACCESSIBILITY IMP	375	0	0	0	0	0	0	375
115N-6	PH 11 SYSTEM ACCESSIBILITY IMP	440	0	0	0	0	0	0	440
115NE	TEXTURED PLATEFORM FLOOR(151NS)	335	0	135	0	0	0	0	0
115NF	SECONDARY BOOTH CONTROL/HC	97	0	97	0	0	0	0	0
115NG	SELF OPERATOR-ELF/HNDICPE	525	50	475	0	0	0	0	0
194602	PARKING CAPACITY EXPANSION	875	0	0	0	0	0	0	875
194603	PARKING FACILITY CONSTRUCTION	10000	0	2000	2000	2000	2000	1125	875
	GROUP: FACILITIES SUPERIOR								
101TC	EXPAND SVC PI/ADDD COVER-RTT	112	6	106	0	0	0	0	0
103US	NEW STOREROOMS (CCY)	52	0	0	0	0	0	0	53
117H-	FURNITURE AND EQUIPMENT- RAF	142	142	0	0	0	0	0	0
117HC	REGIONAL ADMINISTRATIVE CENTER	15086	15086	0	0	0	0	0	0
117JH	TECH TRAINING CENTER(TCC)-CRV	1104	1104	0	0	0	0	0	0

Table III-4 (continued): HART FIVE-YEAR FUNDED CAPITAL PROGRAM (\$X1000)

FMS NO.	PROJECT NAME	FUNDED BUDGET	EST. EXP. 10 JUNE	CASH FLOWS 89/95	85/86	86/87	87/88	88/89	89/90
	GROUP: TRAIN-SEBEL								115
20AC	ELIMINATE STATION INTERFACE	2400	100	1400	400	0	0	0	0
20AD	E-O-LINE MAKES & BREAKS	15	0	0	0	0	0	0	19
20AE	IRON E-O-LINE MAKES & BREAKS	10	0	0	0	0	0	0	10
20CC	MISC WAYSIDE MODIFICATIONS	195	50	70	95	0	0	0	0
20CF	TIMELocking MODS	323	6	277	0	0	0	0	0
20DJ	REDUCE TURNAROUND TIME 2 ME7	65	45	0	0	0	0	0	0
20ED	PRIMARY TRAIN DETECTION STUDY	590	500	0	0	0	0	0	0
20FD	OPTIMIZ SPECU PROPULLS (STUDY)	225	50	165	0	0	0	0	0
20FE	PERMANENT 0-POINTS	247	40	62	0	0	0	0	195
61--	INTEGRATED CONTROL SYSTEM - ICS	27345	8400	9600	7600	1745	0	0	0
91AC	SYSTEM PERFORMANCE STUDY	575	650	125	0	0	0	0	0
	GROUP: AEC & COMMUNICATIONS--								
12700	COMMUNICATIONS CABLE NETWORK	11641	7500	3900	641	0	0	0	0
1271C	LINE PHONES (BHT)	237	10	227	0	0	0	0	0
127KH	NEW PRIVATE-BRANCH PHONE EXCH	240	50	123	0	0	0	0	67
12708E	IRADCC4	3735	2000	1500	235	0	0	0	0
1270K	PLATFORM HA EXT ABOVE G40 STAS	45	0	0	0	0	0	0	65
127R0	PLATFORM CCTV - DOWNTOWN STAS	115	0	0	0	0	0	0	115
144AU	AUTOMATIC TELLERS STUDY	45	0	0	0	0	0	0	45
145AC	EXPAND AFC DAS CAPABILITY	240	50	150	40	0	0	0	0
145AH	JAC/BART/MUNI SUPER PASS	1625	160	700	765	0	0	0	0
145B1	SIXTY CENT MINIMUM FARE	41	21	20	0	0	0	0	0
145CU	10th RETROFIT - CUEIC AFC	105	70	115	0	0	0	0	0

Table III-4 (continued): BART FIVE-YEAR FUNDED CAPITAL PROGRAM (\$X1000)

FMS NO.	PROJECT NAME	FUNDED BUDGET	EST. EXP. 1980 JUNE	CASH FLOWS 85/86	86/87	87/88	88/89	89/90	90/91
14541	SIXTY CENT MIN. FADE-CUEIC VENDOR	6	0	0	0	0	0	0	0
1450A	REPAIR & REDESIGN TRK. ENCLERS	207	207	0	0	0	0	0	0
1796J	MICROFILM READER/PRINTF IMPLM.	175	175	0	0	0	0	0	0
19055	COURTESY PHONE BACKUP A&S CAP	0	0	0	0	0	0	0	0
	GROUP: ELECTRIFICATION								
1031K	2ND FWR TRANSFORMER-PORTL-BMT	220	0	0	0	0	0	0	220
1047E	1047C PCB TRANSFORMER & SF VENT	564	0	0	0	0	0	0	564
1156G	ELECTRICAL CAPACITY INCREASE	570	0	570	0	0	0	0	0
1156E	TRACTION POWER SECOND DELAYS	600	280	200	0	0	0	0	120
1117C	EMERGENCY VENTILATION-OAK WYE(HW)	35	35	0	0	0	0	0	0
	GROUP: PROCUREMENTS								
115CL	RAIL REPLACEMENT PROG 84/86 111/119	668	0	668	0	0	0	0	0
161--	REPLACE MGMT INFO SYS - MIS	4600	4285	150	165	0	0	0	0
164GC	MARIE EXPANSION FOR C-CARS	253	0	0	0	0	0	0	253
179--	REPL ASMT EQUIP 82/84	400	0	400	0	0	0	0	0
1790-	REPL OVERAGE SEDAN/FRT VEP 82/84	913	0	933	0	0	0	0	0
1790-	REPL OVERAGE SEDAN/FRT VLT 84/86	567	0	567	0	0	0	0	0
	GROUP: OTHER COSTS								
195MD	COMPLETE WEST END OF LCI (FIS)	100	0	0	0	0	0	0	100
199*50	LAND AND LAND RIGHTS	121	0	121	0	0	0	0	0
199*51	AGENCY AND UTILITY AGREEMENTS	1523	123	100	100	100	1000	1000	0
199*52	OTHER COSTS (195, 1950 AGENTS, ETC)	1270	28	100	100	100	1442	1442	0
199*54	OUTSTANDING CLAIMS	3026	0	0	0	0	0	3096	0
199*55	PROJECT DEVELOPMENT	6500	1500	1000	1000	1000	1000	1000	0

Table III-4 (continued): HART FIVE-YEAR FUNDED CAPITAL PROGRAM (\$X1000)

FMS NO.	PROJECT NAME	FUNDED	TEST-EXP.	CASH FLOWS					
		000SE1	1110	JUNE	837PS	3329%	82787	81288	88289
98*55	PLANNING AND SA DVLPT.	209	0	400	428	459	492	530	515
98*57	INVENTORY BUILDUP	15581	1500	1500	2212	5026	1000	4342	0
98*59	STA. AREA DEV. INFRASTR. IMPVTS	5000	0	0	2000	1000	1000	1000	0
98*63	FORCE ACCOUNT COSTS	4000	0	0	4000	0	0	0	0
98*66	IMPROVEMENT ALLOWANCE	26100	4500	4000	5000	1100	4200	4300	0
98*72	H.D.W. ACQUISITION	8200	0	1023	2177	2000	2000	200	0
98*73	C-CAN START-UP	2000	0	2000	0	0	0	0	0
	TOTAL	440596	92955	89521	114898	105313	13998	18936	6375

Table III-5: BART FIVE-YEAR UNFUNDED CAPITAL PROGRAM (\$X1000)

FMS NO.	PROJECT NAME	PROGRAM YEARS					CASH FLOW YEARS				
		84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	
	GROUP: VEHICLE										
41GB	2ND GENERATION AT0/138 A-CARS	13800	0	0	0	0	0	3200	10600	0	0
42AA	90 2ND GEN TRANS VEH W/ PRO ATC	106709	0	0	0	0	0	8731	105836	0	0
	GROUP: FACILITIES - MAINLINE										
02AC	ALT ANALYSIS & EIR/AX-LINE	0	1800	0	0	0	0	1800	0	0	0
04AC	EIR & PREL ENGRG/P-LINE PH I	0	2300	0	0	0	0	2300	0	0	0
08AB	L-LINE EXT. STUDIES(LIV-PEAS)	0	1600	0	0	0	0	1600	0	0	0
11RD	DAILY CITY-TURNBACK	63353	0	0	0	0	0	8688	41450	13215	0
11SD	DAILY CITY-YARD	53151	0	0	0	0	0	13352	16348	13933	9518
19A05	AERIAL BARRIERS PHASE I & II	0	0	0	0	0	10738	0	0	0	10738
19A15	SYSTEM SAFETY UPGRADE(PHASE III)	0	0	5000	0	0	0	0	5000	0	0
	GROUP: FACILITIES - STATION & ACCESS										
01EE	435-SP PARKING FACILITY-LWS(III)	0	0	0	3262	0	0	0	0	0	3262
01GG	ALAMEDA PARKRIDE LOT-FVS(III)	0	50	0	0	0	0	0	0	0	50
01HG	200-SP SOUTH PKG EXPAN-HFS(IV)	0	0	113	0	0	0	0	0	0	113
01IE	820-SPACE PARKG EXPAN-SHS(IV)	886	0	0	0	0	0	0	0	0	886
01OF	75-SP PKG LOT REDESIGN-SHS(IV)	0	0	38	0	0	0	0	0	0	38
01UD	IMPROVD BUS WAITING AREA-UCS(III)	0	0	50	0	0	0	0	0	0	50
01VD	BUS/RAIL INTERFACE IMPS-UCS(III)	0	0	0	250	0	0	0	0	0	250
01VG	500-SP SATELLITE LOT-UCS (II)	0	0	0	1800	0	0	0	0	0	1800
01XD	TEMP IMPS/CAL TRANS LOT-FMS(II)	229	0	0	0	0	0	0	0	0	229
01XG	PERM-IMPS/CAL TRANS LOT-FMS(II)	1000	0	0	0	0	0	0	0	0	1000
03JE	PERM IMPVT/CAL TRANS LOT-LAS (I)	0	0	1200	0	0	0	0	0	0	1200

Table III-5 (continued): BART FIVE-YEAR UNFUNDED CAPITAL PROGRAM (\$x1000)

FMS NO.	PROJECT NAME	PROGRAM YEARS						CASH FLOW YEARS						
		84/85	85/86	86/87	87/88	88/89	ML 5	84/85	85/86	86/87	87/88	88/89	ML 5	
03JG	FRINGE PARKING FACILITY-LAS(1)	0	0	2600	0	0	0	0	0	0	0	0	0	2600
03LG	FRINGE PARKING FACILITY-WCS (1)	0	0	3300	0	0	0	0	0	0	0	0	0	3300
03LG	FRINGE PARKING FAC-WCS(1)D/C	0	2700	0	0	0	0	0	0	0	0	0	0	2700
03NC	50-PAC-RR RD# PKG LOT-PHS(1)	0	0	515	0	0	0	0	0	0	0	0	0	515
03NE	1200-SP-WESTLOT EXPANSION-PHS(1)	660	0	0	0	0	0	0	0	0	0	0	0	660
03NE	1200(ADN'L) SP WEST LOT PHS(1)CN	0	10340	0	0	0	0	0	0	0	0	0	0	10340
04GA	200-SPACE BAILEY ROAD LOT-ANS	3202	0	0	0	0	0	0	2894	308	0	0	0	0
04MA	200-SP. HILLCREST AVE LOT-ANS	1688	0	0	0	0	0	0	1507	181	0	0	0	0
05ID	50-SP SFHR PARKG EXPAN-CPS(1V)	0	0	0	95	0	0	0	0	0	0	0	0	95
05KG	50-SP SFHR PARKG EXPAN-CNS(11)	0	0	0	95	0	0	0	0	0	0	0	0	95
11ED	100-SPACE PARKING EXPAN-OWS(11)	0	0	50	0	0	0	0	0	0	0	0	0	50
11OD	BUS/KISS-RIDE INPVTS-RPS (11)	0	0	0	150	0	0	0	0	0	0	0	0	150
11OF	MIDDAY/KISS RIDE LOT-RPS(11)	0	0	0	700	0	0	0	0	0	0	0	0	700
15AZ	WET STANDPIPE & FD CONNS-21 STA	1218	0	0	0	0	0	0	30	850	338	0	0	0
15N-	PH IV SYSTEM ACCESSIBILITY IMPS	0	420	0	0	0	0	0	0	0	0	0	0	420
15NG	SELF OPERATOR-ELEV/HNDICPD	1915	0	0	0	0	0	0	25	1500	390	0	0	0
99*02	PARKING CAPACITY EXPANSION	1600	0	0	0	0	0	0	0	0	0	0	0	1600
GROUP: FACILITIES-SUPPORT														
9800	REGIONAL EMERGENCY TRAINING PROGRAM	1250	0	0	0	0	0	0	0	0	0	0	0	1250
GROUP: TRAIN-CONTROL														
91AC	SYSTEM PERFORMANCE STUDY	275	0	0	0	0	0	0	275	0	0	0	0	0
99*09	WAYSIDE ATC MODS	19965	0	0	0	0	0	0	0	3600	5455	5455	5455	0

Table III-6: BARTO FIVE-YEAR FUNDED CASH FLOW BY SOURCE (\$X1000)

FISCAL YEAR	84/85	85/86	86/87	87/88	88/89	W15	5 YEAR TOTAL
CASH REQUIREMENTS	60521	114898	105813	13998	18936	6375	368561
UMTA FUNDS							
UMTA SEC 3 BOX MONEY (UMTA3)	29765	27644	24869	0	0	2060	84318
UMTA SEC 5 BLOCK GRANT (UMTA9)	2308	0	0	0	0	0	2308
UMTA SEC 5.6.9 PLAN-FRES.(UMTA1)	411	0	0	0	0	0	411
STATE FUNDS							
TRFD/SH-620 GUIDEWAY (GDWYT)	5619	7534	5099	0	0	408	18660
ART. XIX/FROPS GUIDEWAY (GDWYA)	5974	6929	120	0	0	120	13043
SB-1750	405	0	0	0	0	85	490
NIC FUNDS							
TDA	3306	961	2	0	0	310	4579
BRIDGE TOLLS (TOLLH)	3562	2350	917	0	0	150	7019
STA (INC. STA 75% & REG.) (STA)	280	0	0	0	0	0	280
BARTO FUNDS							
GENERAL CONSTRUCTION (OPENG)	14226	12073	7209	4579	1130	778	39595
BASIC SYSTEM COMPLETION (OPERB)	1831	3456	5110	2450	1200	188	14235
SYS. IMPROVEMENT RESERVE (OPERS)	1755	400	0	0	0	43	4198
REV. BOND CONSTR. FUND (OPERV)	8748	45034	55898	277	10651	207	120815
VEH. FIRE HARDENING FND. (OPERF)	1339	1004	30	0	0	154	2527
IMPROVE'T ALLOWANCE/OPER FUNDS	7012	7573	6559	6692	5955	1872	35663

Table III-7: BART FIVE-YEAR UNFUNDED CASH FLOW BY SOURCE (\$X1000)

FISCAL YEAR	84/85	85/86	86/87	87/88	88/89	91/92	5 YEAR TOTAL
CASH REQUIREMENTS	27101	80493	160150	17073	6225	44549	335591
UMTA FUNDS							
UMTA SEC 3 75% MONEY (UMTAD)	10248	17689	99997	8454	0	0	136388
UMTA SEC 9 BLOCK GRANT (UMTA9)	15162	51251	18756	5004	3940	25838	119951
UMTA SEC 5,6,9 PLAN. & RES. (UMTAM)	0	1440	0	0	0	1250	2690
EHWA FUNDS							
FEDERAL AID INTERSTATE (FAI)	0	0	0	0	0	8229	8229
STATE FUNDS							
TP&D/SB-620 GUIDEWAY (GOWYT)	0	178	21613	0	0	0	21791
ART. XIX/PROPS GUIDEWAY (GOWYA)	700	703	1066	1066	1066	0	4601
MIC FUNDS							
TDA	880	1298	347	0	0	320	2845
BRIDGE TOLLS (TOLLB)	77	7137	18152	2549	1145	7512	36572
STA (INC. STA 75% & REG.) (STA)	34	797	219	0	74	1400	2524

Table III-8

CAPITAL PROGRAM COMMITMENTS BASIS
FUNDING REQUIREMENTS VS. PROJECTED FUNDING

FUND SOURCE	84/85	85/86	86/87	87/88	88/89	W I 5	5 YR TOT
UMTA SEC 3 80% MONEY (UMTA3)							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0
UMTA SEC 3 75% MONEY (UMTA4)							
PROJECTED	57600	49300	49201	0	0	0	156101
REQUIRED	136388	0	0	0	0	0	136388
DIFFERENCE	-78788	49300	49201	0	0	0	19713
UMTA SEC 9 BLOCK GRANT (UMTA9)							
PROJECTED	35000	35000	35000	35000	0	0	140000
REQUIRED	85861	8586	11393	5520	0	8590	119950
DIFFERENCE	-50861	26414	23607	29480	0	-8590	20050
UMTA SEC 5 & 9 PLAN & RES. (UMTA4)							
PROJECTED	1725	0	0	0	0	0	1725
REQUIRED	1250	1440	0	0	0	0	2690
DIFFERENCE	475	-1440	0	0	0	0	-965
FEDERAL AID URBAN (FAU)							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0
FEDERAL AID INTERSTATE (FAI)							
PROJECTED	2100	1400	4000	0	0	0	7500
REQUIRED	660	7569	0	0	0	0	8229
DIFFERENCE	1440	-6169	4000	0	0	0	-729
SUBTOTAL FEDERAL FUNDS							
PROJECTED	96425	85700	88201	35000	0	0	305326
REQUIRED	224159	17595	11393	5520	0	8590	267257
DIFFERENCE	-127734	68105	76808	29480	0	-8590	38069
TPGD/SB-620 GUIDEWAY (GDWYT)							
PROJECTED	9000	10000	2100	0	0	0	21100
REQUIRED	21791	0	0	0	0	0	21791
DIFFERENCE	-12791	10000	2100	0	0	0	-691
OTHER STATE (OTHER)							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0
ART. XIX/PROPS GUIDEWAY (GDWYA)							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	4600	0	0	0	0	0	4600
DIFFERENCE	-4600	0	0	0	0	0	-4600
ART. XIX INTERMODAL (PSI)							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0
SB-1750							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0
SUBTOTAL STATE FUNDS							
PROJECTED	9000	10000	2100	0	0	0	21100
REQUIRED	26391	0	0	0	0	0	26391
DIFFERENCE	-17391	10000	2100	0	0	0	-5291

Table III-8 (continued)
CAPITAL PROGRAM COMMITMENTS BASIS
FUNDING REQUIREMENTS VS. PROJECTED FUNDING

FUND SOURCE	84/85	85/86	86/87	87/88	88/89	W I 5	S YR	TOT
TDA								
PROJECTED	0	0	0	0	0	0		0
REQUIRED	1705	1140	0	0	0	0		2845
DIFFERENCE	-1705	-1140	0	0	0	0		-2845
BRIDGE TOLLS (TOLLS)								
PROJECTED	3000	3000	3000	3000	3000	0		15000
REQUIRED	27552	3598	1970	1306	0	2148		36574
DIFFERENCE	-24552	-598	1030	1694	3000	-2148		-21574
IMPROVEMENT ALLOWANCE/OPER FUNDS								
PROJECTED	0	0	0	0	0	0		0
REQUIRED	0	0	0	0	0	0		0
DIFFERENCE	0	0	0	0	0	0		0
STA (INC. STA 75% & REG.) (STA)								
PROJECTED	4000	0	0	0	0	0		4000
REQUIRED	1031	540	879	74	0	0		2524
DIFFERENCE	2969	-540	-879	-74	0	0		1476
SUBTOTAL REGIONAL FUNDS								
PROJECTED	7000	3000	3000	3000	3000	0		19000
REQUIRED	30288	5278	2949	1380	0	2148		41943
DIFFERENCE	-23288	-2278	151	1620	3000	-2148		-22943
GENERAL CONSTRUCTION (OPRG)								
PROJECTED	2000	2000	2000	2000	2000	0		10000
REQUIRED	0	0	0	0	0	0		0
DIFFERENCE	2000	2000	2000	2000	2000	0		10000
BASIC SYSTEM COMPLETION (OPRBS)								
PROJECTED	0	0	0	0	0	0		0
REQUIRED	0	0	0	0	0	0		0
DIFFERENCE	0	0	0	0	0	0		0
SYS. IMPROVEMENT RESERVE (OPERS)								
PROJECTED	0	0	0	0	0	0		0
REQUIRED	0	0	0	0	0	0		0
DIFFERENCE	0	0	0	0	0	0		0
REV. BOND CONSTR. FUND (OPERV)								
PROJECTED	0	5200	1550	0	0	0		6750
REQUIRED	0	0	0	0	0	0		0
DIFFERENCE	0	5200	1550	0	0	0		6750
VEH. FIRE HARDENING FND. (DPERF)								
PROJECTED	0	0	0	0	0	0		0
REQUIRED	0	0	0	0	0	0		0
DIFFERENCE	0	0	0	0	0	0		0
INTEREST TRANSF. FUND (OPERT)								
PROJECTED	0	0	0	0	0	0		0
REQUIRED	0	0	0	0	0	0		0
DIFFERENCE	0	0	0	0	0	0		0
SUBTOTAL BART FUNDS								
PROJECTED	2000	7200	3550	2000	2000	0		16750
REQUIRED	0	0	0	0	0	0		0
DIFFERENCE	2000	7200	3550	2000	2000	0		16750

Table III-9

DALY CITY TURNBACK/YARD FUNDING			
(\$000)			
<u>SOURCE</u>	<u>FUNDED</u>	<u>UNFUNDED</u>	<u>TOTAL</u>
UMTA 3 80%	7,900	-0-	7,900
UMTA 3 75%	-0-	44,038	44,038
UMTA 9 80%	2,168	56,081	58,249
STATE ABDRR	500	-0-	500
STATE ART XIX	9,400	700	10,100
STA	-0-	417	417
MTC	434	15,268	15,702
BART RESERVES	<u>12,894</u>	<u>-0-</u>	<u>12,894</u>
TOTAL	33,296	116,504	149,800

Table III-10

TRANSIT VEHICLE FUNDING 150-C-CARS (Excluding Preproduction ATC) (\$000)			
<u>SOURCE</u>	<u>FUNDED</u>	<u>UNFUNDED</u>	<u>TOTAL</u>
UMTA 3 80%	21,079	-0-	21,079
UMTA 75%	26,000	82,000	108,000
BRIDGE TOLLS	1,431	2,918	4,349
STATE TP&D	9,527	21,791	31,318
BART BOND/RESERVES	<u>110,948</u>	<u>-0-</u>	<u>110,948</u>
TOTAL	168,985	106,709	275,694

Table III-11

EXTENSION PROJECTS BY FUNDING SOURCE

(\$000)

<u>PROJECT</u>	<u>FUNDING SOURCE</u>			
	<u>UMTA 3</u>	<u>STATE</u>	<u>LOCAL</u>	<u>TOTAL</u>
W. Pittsburg/North Concord	181,000	90,500	90,500	362,000
Fremont/Warm Springs	166,000	83,000	83,000	332,000
Bayfair/Dublin	101,000	50,500	50,500	202,000
San Francisco Airport	<u>196,500</u>	<u>98,250</u>	<u>98,250</u>	<u>393,000</u>
TOTAL	644,500	322,250	322,250	1,289,000

Table III-12

SUMMARY OF BART RESERVE CASH BALANCES

(Estimate in \$000's for 1989)

	<u>Line Item</u>	<u>Cumulative Total</u>
Cash Balances (Estimated for June 30, 1984)		160,033
- General Construction (Fund 01)*	22,000	
- Basic System Completion (Fund 01)*	12,000	
- System Improvement Reserve	6,000	
- Revenue Bond Construction Fund	100,000	
- Vehicle Fire Hardening Reserve	2,900	
- Interest Transfer Fund	2,000	
- ROW Acquisition Operating Reserve	5,000	
- Other Capitalized Operating Funds (Prior years' Improvement Allowance, etc.)	8,000	
- Daly City Construction Fund Reserve	2,133	
Anticipated Interest		31,549
Capital Allocations from Operating Budget and TDA Reimbursement		44,559
Estimated Balance for Distribution		236,141
BART Obligations, Local Shares, and Costs Unavailable from Grant Sources, Allocations to Current 5-year and Future Operating Budget, and Net Project Costs		227,533
Contingency Funds (Balance)		8,608

*Interest accrues to the Bond Fund and is available in the five year period; however, reserve balances do not change from year to year to reflect this since the interest does not actually accrue to the specific reserve.

APPENDIX A

BART MAINTENANCE PROGRAM

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I. Introduction

BART presently operates a 72 mile heavy rail transit system with 440 revenue vehicles. In addition to maintenance of revenue vehicles, it must maintain all the support facilities which comprise the District as a whole. These include communication systems (radio and landline), automobiles, trucks, tracks, structures, subways, tunnels, power distribution systems (AC and DC), grounds, buildings, parking lots, fare collection equipment, computers, air distribution systems, pumps, lights, and the list is almost endless. To accomplish these tasks, BART has developed an integrated maintenance program that provides for the required maintenance and repair to be performed and documented.

The BART maintenance goal is to ensure that all equipment is properly maintained and modified if necessary, to maximize its performance and longevity. This is accomplished by an established review process that ensures equipment is performing as planned, through a non-deferable preventative maintenance program and making repairs as required. These maintenance requirements are constantly monitored by Engineers and management to ensure that the appropriate work is being accomplished. To support these activities, BART documents performance and maintenance activities completely, so equipment performance can be analyzed regularly to identify undesirable trends before they become a problem. Encompassed within this plan are details of the maintenance organization, how responsibilities are divided, description of the level of effort for major systems and description of departmental interfaces that implement the BART maintenance program.

II. Maintenance Philosophy

Driving any maintenance program is the underlying philosophy by which an organization operates. Simply stated, BART's system is to have an engineered documented and managed program that will not be deferred. To implement this philosophy, the District has integrated a variety of other supporting philosophies to support our primary mission.

A. Budget

The District is committed to properly financing maintenance. From the Board of Directors down, it receives priority attention. Last year the District committed more than 35% of its operating funds to maintenance.

B. Engineering Support

The District divides its Engineering effort to ensure that maintenance receives appropriate support. At present 24 Engineers are dedicated to direct maintenance support, (12 revenue vehicle, 12 wayside and other systems). These Engineers work daily with Maintenance personnel to solve problems, analyze failures, develop maintenance procedures and implement changes.

In addition, an Engineering Department exists which supports many of the long-range activities and provides design support for projects as they are identified.

C. Preventative Maintenance

No maintenance program can be effective without a well designed and enforced preventative maintenance program. At BART, preventative maintenance will always be accomplished on time. Deferred preventative maintenance is not accepted. Preventative maintenance requirements are developed by Engineers in conjunction with Maintenance Management and performance is monitored to ensure adequacy. Changes are made as required to address a changing environment.

D. Reliability Tracking

Equipment reliability is the ultimate goal of all maintenance programs. To ensure that equipment is performing as planned, all relevant data about maintenance activities and equipment performance is entered into a computer. BART's Reliability Engineering Division primary function is to monitor and report performance parameters. Reports take the form of daily, weekly, and quarterly publications along with a variety of special reports that are intended to focus on special performance parameters. This reporting network ties all levels of management to a common performance criteria and keeps system performance in the forefront of daily activities.

E. Repairs

It is understood that failures will occur. Our maintenance philosophy is to be prepared to react to unscheduled maintenance as a matter of course with reasonable turnaround to keep the required amount of equipment available at all times. This philosophy has translated into one of the best car and wayside utilization records for rail transit in the country.

F. Modification

It is sometimes easy to look at a relatively small problem and think that a change is necessary to correct it by modification. BART's philosophy is that all things will fail at some rate. The overriding point is whether that rate significantly impacts operations. We endeavor to avoid expensive changes which have marginal return. Great effort is put into the concept that we "fix only what is broken" i.e., only change those things which will give a return on the investment or provide greater safety. Lesser failures must be worked on at fault tolerance level.

This means that available dollars or staff are focused to maximize our effectiveness. The management of this concept starts at the top with the Project Review Board which oversees all District projects over \$25,000 and ensures that proper focus and control is maintained.

G. Staffing

To support the maintenance program, BART has a skilled labor force that is trained to accomplish the required tasks. The staffing needs of each department are regularly reviewed to ensure that adequate staff is present to support all planned projects and required tasks. The District historically has not hesitated to add maintenance staff to respond to its needs. The success of our existing maintenance program has not made this requirement necessary in recent years. Since 1976 BART has increased the number of daily trains by 30% and the number of total car hours by 57%, but total direct maintenance staff has decreased by 12%.

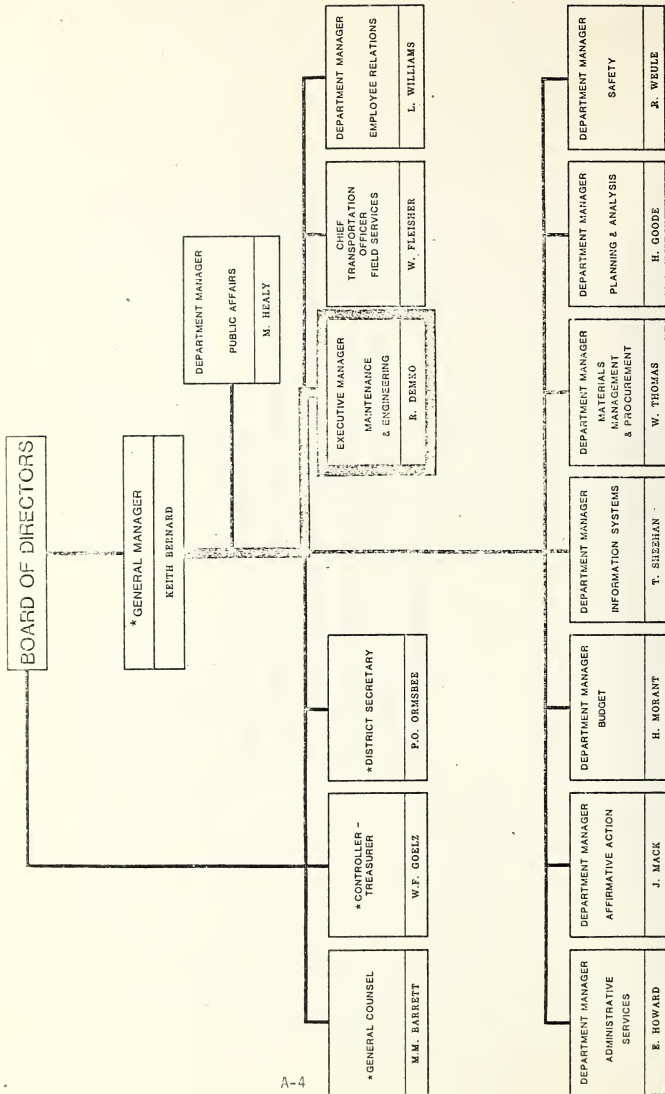
H. Training

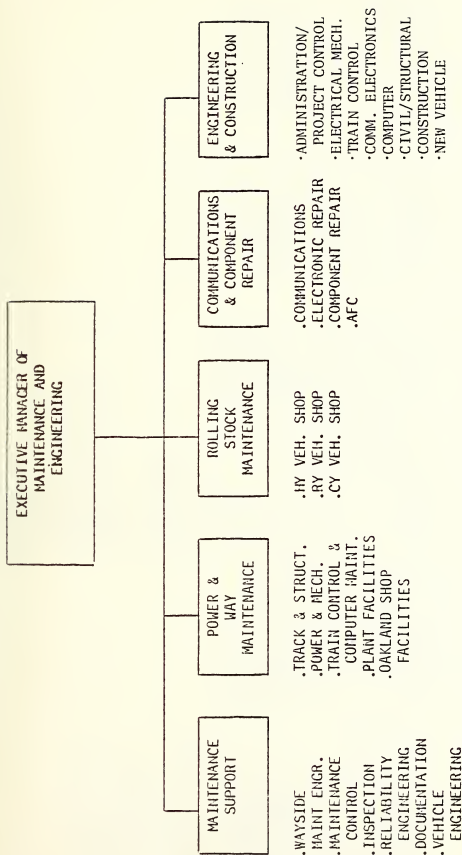
The District has a comprehensive maintenance training program to ensure that skills are developed to an acceptable level. This includes a certification program for the Maintenance staff, and specific training for District personnel to advance their knowledge in areas required in the performance of their duties. A Technical Training staff of 16 people provide this service. In addition to Technical Training, BART also has a General Training Department which teaches a variety of courses to improve the administrative Integrity of BART personnel. Additional amplification of the training program is provided as an attachment.

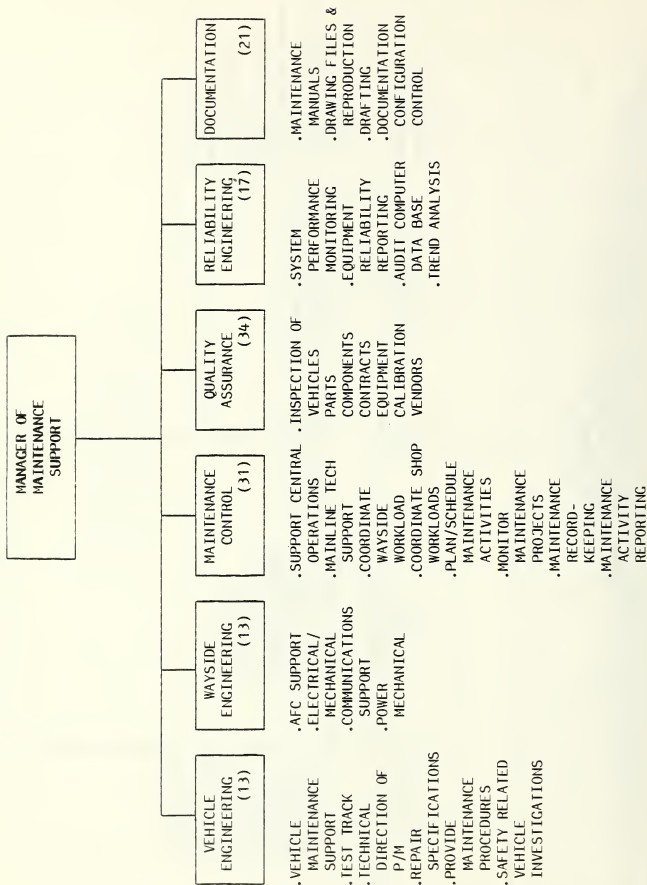
III. Organizational Breakdown

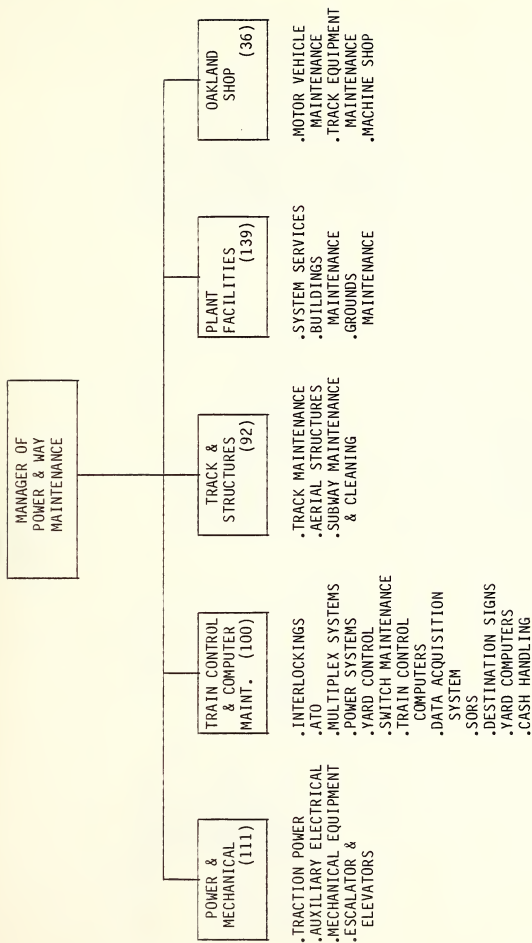
The Maintenance Departments and their primary support functions are combined within Maintenance & Engineering headed by R. P. Demko, Executive Manager, BART. The organizational charts in this section are designed to give a picture of how each is organized, staffed and its areas of responsibility.

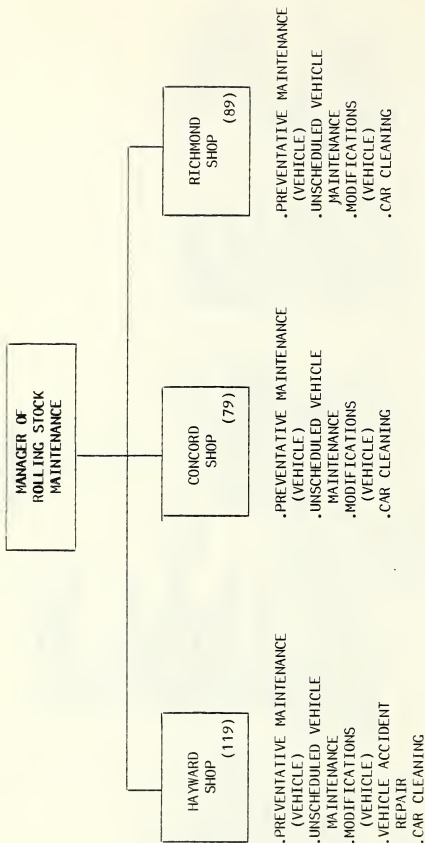
SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

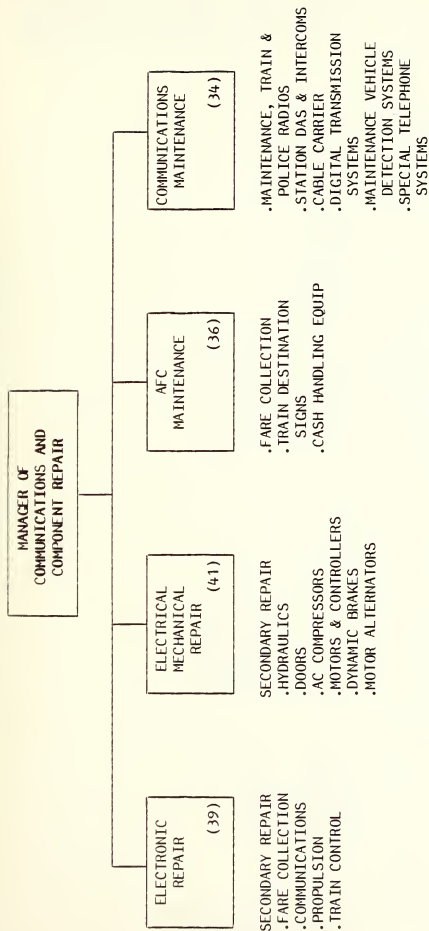


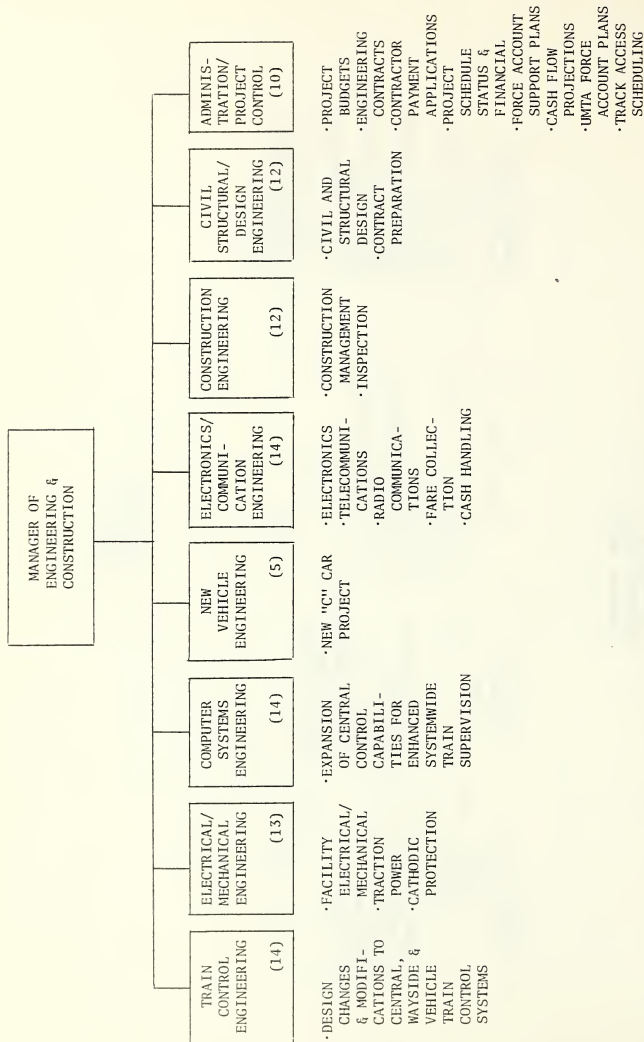






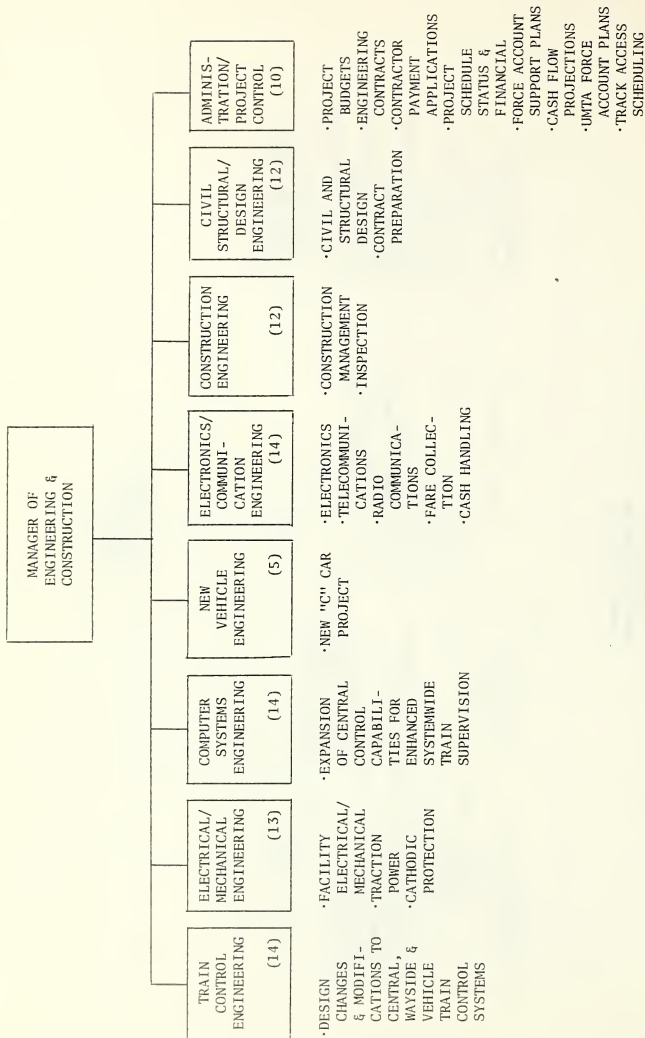






IV. Major Maintenance Activities

To describe the level of effort given to maintenance and provide a picture of the complexity of the maintenance program at BART the following tables were prepared for major maintenance activities.



IV. Major Maintenance Activities

To describe the level of effort given to maintenance and provide a picture of the complexity of the maintenance program at BART the following tables were prepared for major maintenance activities.

MAJOR SYSTEMS AND MAINTENANCE ACTIVITIES

DESCRIPTION	ACTIVITY	AMOUNT	FREQUENCY	WORK LOCATION	ESTIMATED M/HR/VR
ROLLING STOCK MAINT.					
Revenue Vehicle	Vehicle PM	440 Cars	450 Hrs.	All Shops	65,500
	Veh. Unsch. Maint.	"	As Failed	All Shops	207,000
	Veh. Accd. Repair	"	As Required	Hayward Shop	3,000
	Veh. Vandalism	"	As Required	All Shops	10,000
	Veh. Modification	"	As Scheduled	All Shops	17,500
	Car Cleaning	"	Daily	All Yards	47,800
COMM. & COMP. REPAIR					
ATO Vehicle	PM	342	Annually	ERS-Hayward	2,100
Component Maint.	Unsch. Maintenance	1,648	As Required	ERS-Hayward	8,200
ATC - Wayside	PM	2,330	Annually	ERS-Hayward	6,600
Comp. Maintenance	Unsch. Maintenance	2,019	As Required	ERS-Hayward	11,500
Communication Equip.	PM	915	Annually	ERS-Hayward	1,300
Components	Unsch. Maintenance	1,728	As Required	ERS-Hayward	14,500
Vehicle Propulsion	PM	112	Annually	ERS-Hayward	800
Components	Unsch. Maint.	3,699	As Required	ERS-Hayward	12,500
Hyd.					
	Unsch. Maint.	4,070	As Required	ERS-Hayward	17,400

DESCRIPTION	ACTIVITY	AMOUNT	FREQUENCY	WORK LOCATION	ESTIMATED M/HRS/YR
Door & Misc. Hardware					
Repair for RV	Unsch. Maint.	340	As Required	EMRS-Hayward	2,400
Elec. Mech. Comp.					
from Revenue Vehicle	Unsch. Maint.	8,609	As Required	EMRS-Hayward	43,400
	Mods. & Updates	303	As Required	EMRS-Hayward	3,800
	Spec. Proj. & Ser.	761	As Required	EMRS-Hayward	1,200
A/C Comp. Repair, RV	Unsch. Maint.	407	As Required	EMRS-Hayward	11,100
Supervisory Control	PM	237	Mo/Qtr/Semi	Systemwide	2,868
Systems (DTS, MVDD,					
Recorders, Modems)	Repair	-	As Required	Systemwide	1,680
Radio Systems	PM	350	Annual	Systemwide	1,600
(Train, Maint.,					
Yard, Police)	Repair	-	As Required	Systemwide	4,724
Station Comm.	PM	105	Mo/Qtr/Semi	Systemwide	800
(PA, ICS, Monitors)	Repair	-	As Required	Systemwide	7,388
Telephone Systems	PM	140	Mo/Qtr/Semi	Systemwide	2,469
(Maint, Emerg, Other)	Repair	-	As Required	Systemwide	2,184

DESCRIPTION	ACTIVITY	AMOUNT	FREQUENCY	WORK LOCATION	ESTIMATED M/HRS/VR
Carrier & Wayside (Cable, Plant)	PM	63	Mo/Qtcr/Semi	Systemwide	2,742
Carriers)	Repair	-	As Required	Systemwide	2,782
AFC MAINT (Incl. Comp. for Lic. Vend. Gates, Addfare, Changers, etc)	PM	868	Annually	ERS-Hayward	3,500
	Unsch. Maintenance	2,128	As Required	ERS-Hayward	13,000
	Acceptance Testing	2,000	As Required	ERS-Hayward	500
ATO Veh. Comp. Maint.	PM	342	Annually	ERS-Hayward	2,100
	Unsch. Maint.	1,648	As Required	ERS-Hayward	8,200
ATC Wysd Comp. Maint.	PM	2,330	Annually	ERS-Hayward	6,600
	Unsch. Maint.	2,019	As Required	ERS-Hayward	11,500
Comm. Comp. Maint.	PM	915	Annually	ERS-Hayward	1,300
	Unsch. Maint.	1,728	As Required	ERS-Hayward	14,500
Vehicle Prop.	PM	112	Annually	ERS-Hayward	800
Component Maint.	Unsch. Maint.	3,699	As Required	ERS-Hayward	12,500
Destination Signs	PM	284	Quarterly	All Stations	2,840
	Repair		As Required	All Stations	1,200

DESCRIPTION	ACTIVITY	AMOUNT	FREQUENCY	WORK LOCATION	ESTIMATED M/HR/yr
Sedans	Unsch. Repair	97	As required	O K S	4,424
	PM		6000 mi.	O K S	3,620
Lt.Trucks	Unsch. Repair	128	As required	O K S	5,865
	PM		6000 mi.	O K S	4,778
Heavy Equip.	Unsch. Repair	104	As required	O K S	11,225
	PM		30 days - 100 Hrs.	O K S	7,483
Portable Equip.	Unsch. Repair	123	As required	O K S, & system wide	1,248
	PM		30 - 90 days	O K S, & system wide	877
MACHINE-FABRICATION SHOP:					
District Equipment	Modification	260	As required	O K S	2,080
District Equipment	Repairs	780	As required	O K S	4,160

<u>DESCRIPTION</u>	<u>ACTIVITY</u>	<u>AMOUNT</u>	<u>FREQUENCY</u>	<u>WORK LOCATION</u>	<u>ESTIMATED M/HR/HR/YR</u>
YARD CONTROL	PM	172	DLY/WK/MO/SEMI-AN/AN	YARDS	9,946
SYSTEM	UNSC.	172	AS REQUIRED	YARDS	4,119
T/C RM INSPECT	PM	41	WEEKLY	SYSTEM WIDE	6,102
ROUTE PROHIBITS	AS REQUIRED				
	AS REQUIRED	26	DAILY	SYSTEM WIDE	1,872
ENG. MODS	UNSC.	38	AS REQUIRED	SYSTEM WIDE	720
DISPLAY BOARD	PM	1	MO.	SYSTEM WIDE	2,600
	UNSC.	1	AS REQUIRED	SYSTEM WIDE	6,160
SOR	PM	70	MO.	SYSTEM WIDE	2,940
	UNSC.	70	AS REQUIRED	SYSTEM WIDE	1,260
DAS	PM	36	MO.	SYSTEM WIDE	3,200
	UNSC.	36	AS REQUIRED	SYSTEM WIDE	1,900

<u>DESCRIPTION</u>	<u>ACTIVITY</u>	<u>AMOUNT</u>	<u>FREQUENCY</u>	<u>WORK LOCATION</u>	<u>ESTIMATED M/HRS/YR</u>
DSS	PM	40	MO.	SYSTEM WIDE	3,360
	UNSCH.	40	AS REQUIRED	SYSTEM WIDE	1,440
TRAIN CONTROL COMPUTER SYS.	PM	3	DAY/MO.	LMA	3,850
	UNSCH.	3	AS REQUIRED	LMA	1,650
YARD COMPUTER	PM	3	MO.	YARDS	2,400
	UNSCH.	3	AS REQUIRED	YARDS	900
ENG. MOD	UNSCH.	38	AS REQUIRED	SYSTEM WIDE	700

* DOES NOT INCLUDE NEW SW FOR KE.

<u>DESCRIPTION</u>	<u>ACTIVITY</u>	<u>AMOUNT</u>	<u>FREQUENCY</u>	<u>WORK LOCATION</u>	<u>ESTIMATED M/HR\$ /YR</u>
WAYSIDE MUX	PM	1750	ANNUAL	SYSTEM WIDE	10,879
	UNSCH. REPAIR	1750	AS REQUIRED	SYSTEM WIDE	4,517
STATION MUX	PM	87	QTRLY	SYSTEM WIDE	1,657
	UNSCH.	87	AS REQUIRED	SYSTEM WIDE	685
MAINT. ATO/ATC	PM	91	MONTHLY	SYSTEM WIDE	2,644
	UNSCH.	91	AS REQUIRED	SYSTEM WIDE	1,092
INTERLOCKING SYSTEM	PM	38	BI-ANNUAL	SYSTEM WIDE	7,532
	UNSCH.	38	AS REQUIRED	SYSTEM WIDE	3,122
SWITCH MACHINES	PM	782*	DLY /MO /QTR /SEMI- ANN.	SYSTEM WIDE	19,837
	UNSCH.	782	AS REQUIRED	SYSTEM WIDE	7,395
POWER SYSTEMS	PM	139	WK/MO/BI-MO THLY	SYSTEM WIDE	4,527
	UNSCH.	139	AS REQUIRED	SYSTEM WIDE	1,878

DESCRIPTION	ACTIVITY	AMOUNT	FREQUENCY	WORK LOCATION	ESTIMATED HOURS/YR
<u>System Service</u>					
A-Line	Scheduled Maint.	9	Daily	Stations	24,960
R-Line	"	6	"	"	20,800
M-Line	"	8	"	"	37,440
C/K-Lines	"	7	"	"	22,880
Shops/Bldgs.	"	10	"	Systemwide	33,280
Supply	Deliver Supplies	44	"	"	2,080
					<u>141,440</u>
<u>Painters</u>					
Paint	Scheduled Projects	25	Daily	Systemwide	14,560
					<u>14,560</u>
<u>Bldg Maint & Repair</u>					
Locksmithing	P.M.	44	Daily	Systemwide	4,160
A-Line	P.M.	15	"	"	4,160
R/K-Lines	P.M.	9	"	"	4,160
M-Line	P.M.	10	"	"	4,160
C-Line	P.M.	8	"	"	4,160
Projects	Scheduled Projects	44	"	"	4,160
					<u>8,320</u>
					<u>29,120</u>
<u>Grounds</u>					
A-Line	P.M.	10	Daily	Stations/Bldgs	18,720
R/C-Lines	P.M.	12	"	"	16,640
M-Line	P.M.	5	"	Stations	4,160
Irrigation	P.M.	32	"	Stations/Bldgs	6,240
Truck/Tractor	P.M.	32	"	"	4,160
Roving Crew	Wayside/Unscheduled Maintenance	32	"	Wayside/Stations/ Bldgs	<u>8,320</u>
					<u>58,240</u>

DESCRIPTION	ACTIVITY	(MILES) AMOUNT	FREQUENCY	WORK LOCATION	ESTMAATED M/HR/ YR
Track Inspection	P.M.	150	DAILY	SYSTEMWIDE	16640
BOLT TORQUING	P.M.	150	DAILY	SYSTEMWIDE	12480
TRACK SURFACE/GAGING	P.M.	150	DAILY	SYSTEMWIDE	18720
RUST PREVENTION	P.M.	150	DAILY	SYSTEMWIDE	8320
SPENO RAIL GRINDING	P.M.	150	DAILY	SYSTEMWIDE	6240
in house support	support	150	AS REQUIRED	SYSTEMWIDE	4160*
CONTRACTOR SUPPORT	SUPPORT	150	AS REQUIRED	SYSTEMWIDE	2080
CLEAN,LUBE,GRIND,SWITCHES	P.M.	YARD/INTERLOCKINGS	DAILY	SYSTEMWIDE	4160

DESCRIPTION	ACTIVITY	AMOUNT	FREQUENCY	WORK LOCATION	ESTIMATED M/HR/yr
WATER CONTROL	PREVENTATIVE		DAILY	SYSTEMWIDE	
(a) Aerial		24.	Daily	Systemwide	2080
(b) Grade	Maintenance	28.6	Daily	Systemwide	9320
(c) Sub Station		1818			4160
Chemical Grouting (Sub Structures)	Preventive Maintenance	8.1	Daily	Systemwide	4160
INVERT CLEANING Vent Cleaning	ROUTINE Maintenance	75	DAILY	SYSTEMWIDE	8320
TRACKWAY SIGNS	ROUTINE MAINTENANCE	75	DAILY	SYSTEMWIDE	5200
SUPPORT	SCHEDULED AND UNSCHEDULED		DAILY	SYSTEMWIDE	4160
WELDERS	ROUTINE MAINTENANCE		DAILY	SYSTEMWIDE	8320
INSPECTION	ROUTINE MAINTENANCE	75	DAILY	SYSTEMWIDE	4160

V. Support Departments

Embodied within any maintenance organization are those services provided by non-maintenance departments that support the program.

Obviously, there are a number of administrative activities that keep an organization going (i.e. Accounting, Employee Relations, Budget, Safety) which will not be discussed in this plan, but there are activities which have a more direct connection to a maintenance plan and serve to implement the process.

Field Services

The following describes Field Services activities which support/interface with BART's maintenance program:

A. Car Failures

Train operators report mainline train failures annunciated on their operator's console and/or those that are obviously affecting their train's performance, to BART Central. Central and the Vehicle Technician representative analyze the problem(s) and advise the Train Operator how he/she can either correct or alleviate the problem or they arrange for the Mainline Electronic Technician (ET) to board the train and correct/monitor the failure. Some problems are corrected temporarily through the use of the system cut-outs on the car control panel. When the train lays up in the yard, the failure is reported by type and car number to the Tower Supervisor who in turn reports them to the Shop Foreworker. The bad order car is uncoupled from all others and delivered to the location requested by Maintenance.

B. Train Wash

Train Operations' goal is to cycle 300 cars per yard per week through the car washers.

C. Public Address/Intercom Failure Detection

Train Operations has a program for detecting and reporting bad order train public address and intercom systems. This task requires the services of two (2) Train Operators, and is performed at a time when there is little or no other yard requirements. Inoperative equipment is reported to shop personnel.

D. Station Operations

AFC or Transfer Machine Equipment Failures

Fingertip maintenance by Agents involve clearing ticket and money jams. No outside help is required for this task.

Machine mechanical failures require an Agent to complete the System & Equipment Incident Report (S.E.I.R.) followed by a phone report to AFC Maintenance in Hayward.

All other equipment failures (elevator/escalators) and buildings and grounds discrepancies are reported on Maintenance Forms by the Agent. The completed form must be followed up by a phone report to the Power and Way Maintenance Control Center.

Information Systems

Information Systems provides essential support and direct interface to BART's maintenance program primarily through the Maintenance and Reliability Information System (MARIS).

At the present time MARIS enhances the tracking and maintainability of BART's transit vehicles and wayside equipment by providing the following services:

1. Tracks fleet status which relates to transit vehicle availability and provides train consist information.
2. Reports failure and reliability statistics which aid in determining appropriate time intervals for preventative maintenance.
3. Aids in scheduling and expediting repairs and preventative maintenance of transit vehicles and wayside equipment.
4. Gives diagnostic aid and pre-staging assistance for maintenance functions by furnishing related transit vehicle history, including a list of tracked maintenance and modified items.
5. For the secondary repair shops, tracks components through the repair cycle to expedite repair by priority of need and to aid in implementing modifications.
6. Identifies components which may need engineering attention.
7. Furnishes BART management with failure trend data and exception reports to assist in improving maintainability of transit vehicles and wayside equipment.

MARIS is in the process of being expanded to accommodate processing of data for the new C-cars with special emphasis upon warranty. Capability will be added for tracking vehicle and wayside components which are subject to measured time change-out.

Training

The BART Training Division (a part of the Employee Relations Department) provides classroom and hands-on training services to all maintenance departments/divisions upon request.

Routine and certification training is provided to Rolling Stocks Maintenance, Train Control, Computer Maintenance, Communications and A.F.C., Power and Support Electrical Maintenance, Track and Structures and Buildings and Grounds.

Training works closely with Vehicle Engineering and Documentation to assure that technical subject matter taught in the classes is current and accurate.

Training will be conducting classes on the C-car and consequently is working very closely with Design Engineering to assure that all relevant topics are taught satisfactorily.

Training is also involved in documenting and developing a training class for the "KE" track.

Provided as an attachment is a list of training courses taught by this department in support of maintenance.

Material Management and Procurement

Performs the logistical functions of the District. The scope of District logistical functions ranges from material planning through all phases of procurement, custody, distribution and control procedures. Typical functions performed for maintenance departments by the Purchasing section are:

1. Vehicle Engineering: Review and comment on specification workability; assist with procedure definitions; resolve Quality Assurance exceptions with vendors; coordinates project communications with vendors; purchase and expedite materials and services; develops alternate sources.
2. Direct maintenance (RSM, C&CR, P&W): Purchase and expedite materials and services; negotiate adjustments with vendors and secure information from the market place.
3. Maintenance Planning: Supply information on availabilities and lead times plus some expediting.

Typical functions performed for maintenance departments by Contract Management section are:

1. Vehicle Engineering: Development of commercial and technical specifications; bidding and contract administration.
2. Direct maintenance (RSM, C&CR, P&W): Procurement of plant and capital equipment. Development of repair contracts; bid and contract administration.
3. Maintenance Planning: Participates in planning for capital spares.

Typical functions performed for maintenance departments by Material Administration section are:

1. Vehicle Engineering: Makes up and stocks parts kits for modifications; provides usage history on parts; puts new items in stock; holds materials in custody, transports, issues and receives as required.
2. Direct maintenance (RS&R, C&CR, P&W): Maintains maintenance parts inventory; issues, receives, transports and distributes material and equipment; scraps spent supplies and equipment for repair operations and outside repair contract; backorders and reorders parts; prepares parts status lists; assembles and issues modification kits.
3. Maintenance Planning: Prepares parts status reports and usage reports; input Maintenance Monthly Plan.

Planning and Analysis

The Planning Division of the Planning and Analysis Department is responsible for financing the BART capital program and its presentation to MTC for incorporation into the Regional Transportation Plan. The Planning Division provides documentation required by the MTC/UMTA grant review process and provides necessary liaison between BART and outside agencies leading up to the point where project funding is assured.

The Research section works with Field Services to define future train service levels. This information is then translated into car mile and car hour estimates which are the basis for vehicle maintenance planning. The Research section also prepares the Quarterly Performance Report (QPR) which summarizes progress toward all District objectives, including maintenance objectives dealing with car availability, AFC equipment availability and elevator and escalator availability.

VI. ATTACHMENTS

MAINTENANCE AND RELIABILITY
INFORMATION SYSTEM
(Expansion)

MAINTENANCE AND RELIABILITY INFORMATION SYSTEM

INTRODUCTION

The Maintenance and Reliability Information System (MARIS) is a module of BART's overall computerized management information system.

INTRODUCTION TO MARIS

MARIS is a CRT menu-driven system with optional hard copy printing capabilities at most of the terminal locations. There are eight (8) primary user groups:

- o Trouble Desk
- o Maintenance Control
- o Vehicle Maintenance
- o Wayside Maintenance
- o Secondary Repair
- o Transportation Towers
- o Reliability Engineering
- o Vehicle Maintenance Engineering

MARIS provides data to assist in maintaining reliable transit vehicles and wayside support equipment, as well as providing on-line data to assist management. MARIS terminals are located in:

- o Three Vehicle Shops
- o Three Yard Towers
- o Vehicle Maintenance Engineering
- o Maintenance Control (Hayward Main Shop)
- o Central Operations
- o Wayside Maintenance Shops
- o Reliability Engineering and
- o Secondary Maintenance

Regular users of MARIS information include:

- o Maintenance Control Schedulers
- o Shop Foremen
- o Shop Superintendents
- o Reliability Engineering and Quality Assurance Staff
- o Engineering Design and Support Staff
- o Maintenance and Engineering Management
- o Field Services Personnel
- o Planning and Research Staff
- o APTA's Trip Program Participants
- o Safety Personnel
- o Legal Staff
- o Materials Management Personnel

MARIS AT THE PRESENT TIME

The existing system was developed to enhance the tracking and maintainability of BART's transit vehicles and wayside equipment by providing the following services:

- (a) Tracks fleet status which relates to transit vehicle availability and provides train consist information.
- (b) Reports failure and reliability statistics which aid in determining appropriate time intervals for preventative maintenance.
- (c) Aids in scheduling and expediting repairs and preventative maintenance of transit vehicles and wayside equipment.
- (d) Gives diagnostic aid and pre-staging assistance for maintenance functions by furnishing related transit vehicle history, including a list of deferred maintenance and modified items.
- (e) For the secondary repair shops, tracks components through the repair cycle to expedite repair by priority of need and to aid in implementing modifications.
- (f) Identifies components which may need engineering changes.
- (g) Participates in industry related reliability and failure analysis (e.g., APTA's trip).
- (h) Furnishes BART management with failure trend data and exception reports to assist in improving maintainability of transit vehicles and wayside equipment.

MARIS IS DIVIDED INTO SIX FUNCTIONAL AREAS:

(a) Consist Tracking

- o Status and location of consists and the transit vehicles they contain
- o Collection of consist failure and history data

(b) Transit Vehicle Tracking

- o Status and location of transit vehicles
- o Collection of reliability and failure data
- o Incident tracking and reporting
- o Failure and repair history

(c) Transit Vehicle Maintenance

- o Status of the maintenance being performed on a transit vehicle
- o Daily and weekly input on maintenance workload and scheduling

(d) Wayside Equipment Maintenance

- o Status and location of wayside equipment
- o Daily and weekly input on maintenance workload and scheduling

(e) Secondary Repair

- o Status and location of repairable parts
- o Daily and weekly input on maintenance workload and scheduling
- o Repairable item tracking
- o Control over repairable and consumable parts
- o Component reliability analysis

(f) PM Scheduling Support

- o Daily and weekly input and update on workloads and scheduling of transit vehicles and wayside equipment maintenance
- o Maintenance planning and management
- o Planning and scheduling of routine maintenance in primary and secondary shops

The software for MARIS consists of a mixture of on-line, interactive programs and batch programs. Data for the system resides in a mix of on-line and batch data bases and magnetic tape archive files.

There are four groups of DL/I data bases which address:

- o Consists
- o Transit vehicles
- o Wayside equipment
- o Components

PLANNED CHANGES AND ENHANCEMENTS TO MARIS

The District has ordered 150 new transit vehicles of a different kind than those in the present fleet. The new cars have been designated Type "C" cars as opposed to the existing "A" and "B" types of cars.

MARIS must accommodate the processing of data for the new cars in the following areas:

- o Warranty Management
- o Time Control Management
- o New functions such as split train and component verification

New software must be developed to handle these areas. New data bases will be required for some of these areas of development. Approximately, twelve existing MARIS programs will require modification to handle "C" car data.

This system expansion also calls for extending data base maintenance capability, and changing segment access methodology for certain functions from first in, first out (FIFO) to last in, first out (LIFO).

MARIS services a great variety of needs. The computer application system aspect of MARIS of necessity is complex. At the present time, there are more than 45 basic functions (e.g., Fleet Status, Vehicle Status). In addition many of the functions have several options. More functions will be added as part of the MARIS Expansion Project.

MAINTENANCE TRAINING

COURSE DESCRIPTIONS

D. COMMUNICATION ELECTRONIC TECHNICIANS (CET's)

TITLE:

1. TRAIN RADIO

OVERALL OBJECTIVES: To assure that Communications Electronic Technicians (CET's) maintain an acceptable level of knowledge in the proper maintenance and repair of Train Radio Communication Systems.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids and some hands-on application.

EXAMINATION: Written examinations covering the Train Radio System, its functions and troubleshooting.

TARGET AUDIENCE: Communications Electronics Technician: (CET's) assigned to the Communications Section.

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. Train Radio Base Sections and all associated equipment
2. Station Antennas and Feed Arrangements
3. TCC (Train Control Console) at Central
4. Console Support Equipment at LMA Toll Test Board RR #2
5. Radio Test Equipment
6. Keying Systems
7. System Troubleshooting
8. Module Adjustment
9. Adjustment of Base Station Transmitter
10. FCC Documentation
11. Safety Procedures
12. Clearance Procedures
13. Audio Adjustments

COURSE LENGTH: Forty (40) Hours (May be taught in full length or modular form)

TITLE:

2. MAIN DISTRIBUTOR FRAME

OVERALL OBJECTIVES:

To assure that Communications Electronic Technicians (CET's) maintain an acceptable level of knowledge in the proper maintenance and repair of the Main Distributor Frame and its functions.

COURSE FORMAT:

Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids and some hands-on application on the Main Distributor Frame at the Lake Merritt Toll Test Board.

EXAMINATION:

Written examinations covering the Main Distributor Frame, its functions and troubleshooting.

TARGET AUDIENCE:

Communications Electronics Technicians (CET's) assigned to the Communications Section.

CYCLE:

Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. Quality Control Standards with Regard to the Main Distributor Frame
2. Main Distributor Frame Documentation
3. System Security
4. Clearance Required
5. Carrier Voltage Considerations

COURSE LENGTH:

Four (4) Hours

TITLE:

3. BART TELEPHONE SYSTEM

OVERALL OBJECTIVES: To assure that Communications Electronic Technicians (CET's) maintain an acceptable level of knowledge in the proper maintenance and repair of the BART Telephone System.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids and some hands-on application.

EXAMINATION: Written examinations covering BART's Telephone System, its functions and troubleshooting.

TARGET AUDIENCE: Communications Electronics Technicians (CET's) assigned to the Communications Section.

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. General Telephone Theory
2. Hybrids
3. Transformers/Loading Coils
4. Telephone Line Characteristics
5. Maintenance Telephones
6. Emergency Telephones
7. OPL/PABX Telephones
8. Red/Green/Yellow/Black and Mine Telephones
9. PBX's
10. Networks
11. Telephone Test Equipment
12. Common Battery
13. Local Battery
14. CB/LB Interface
15. MT Switchboard
16. ET Console
17. TTB Equipment
18. Signaling
19. Dials
20. E-M Trunk Signaling
21. Troubleshooting Telephone Systems

COURSE LENGTH: Forty (40) Hours (May be taught in full length or modular form)

TITLE:

4. BART DIGITAL TRANSMISSION SYSTEM

OVERALL OBJECTIVES: To assure that Communications Electronic Technicians (CET's) maintain an acceptable level of knowledge in the proper maintenance and repair of the BART Digital Transmission System.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids visual inspection of actual equipment and limited hands-on application.

EXAMINATION: Written examinations covering BART's Digital Transmission System, its functions and troubleshooting.

TARGET AUDIENCE: Communications Electronics Technicians (CET's) assigned to the Communications Section.

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. General Considerations of the Digital Transmission System (DTS)
2. Review of Digital Logic
3. Functions of the Digital Transmission System
4. Block Diagrams of the DTS
5. Identification of the Components of the DTS
6. DTS Interface
7. DTS Test Equipment
8. DTS Troubleshooting
9. DTS Documentation
10. DTS Circuit Analysis
11. DTS Safety Precautions
12. Failsafe
13. Lost Interrupt
14. Work "31"
15. DTS Modems
16. DTS Backup Panel
17. DTS Backup Lines
18. DTS Key Functions
19. DTS Addressing
20. DTS Word Format

COURSE LENGTH: Forty (40) Hours (May be taught in full length or modular form)

TITLE:

5. BART K-24 CARRIER SYSTEM

OVERALL OBJECTIVES: To assure that Communications Electronic Technicians (CET's) maintain an acceptable level of knowledge in the proper maintenance and repair of the BART K-24 Carrier System.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids visual inspection of actual equipment and limited hands-on application (first week).

Field training (Task Training Week) in a field environment with the instructor directing terminal/repeater measurement/adjustment for the first night. The involvement of the instructor will be on a diminishing basis as the week progresses.

EXAMINATION: Written examinations covering BART's K-24 Carrier System, its functions and troubleshooting.

TARGET AUDIENCE: Communications Electronics Technicians (CET's) assigned to the Communications Section.

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. General Considerations of "Carrier" Systems
2. Type of "Carrier" Systems
3. Modulation Systems
4. Block Diagrams of the K-24 System
5. Modulation Plan
6. Frequency Conversion
7. Balanced Modulators/Demodulators
8. System Block Diagrams Including Signaling
9. Module Block Diagrams
10. Alarm Systems
11. Power Systems
12. Power Feed System
13. Repeater Block System
14. Repeater Slope and Span Pads
15. Circuit Analysis of Modules
16. Repeater/Amplifier Pad Calculations
17. Test Equipment

COURSE LENGTH: Forty (40) Hours Classroom
Forty (40) Hours Task Training
Eighty (80) Hours Total (May be taught in full length or modular form)

TITLE:

6. ELECTRONIC KTS TELEPHONE SYSTEM

OVERALL OBJECTIVES: To assure that Communications Electronic Technicians (CET's) maintain an acceptable level of knowledge in the proper maintenance and repair of the Electronic KTS Telephone System.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids, available documentation and spare parts.

Part of this training will be conducted on-site at both Central and the Toll Test Board Room.

EXAMINATION: Written examinations covering the Electronic KTS Telephone System, its functions and troubleshooting.

TARGET AUDIENCE: Communications Electronics Technicians (CET's) assigned to the Communications Section.

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. ITT MKS131 System Block Diagrams
2. Station Equipment
3. Line Equipment
4. Intercommunications Equipment
5. Common Equipment
6. Power Supplies
7. Documentation
8. Strapping Options
9. Safety Considerations
10. System Troubleshooting
11. Data Transmission

COURSE LENGTH: Twenty (20) Hours (May be taught in full length or modular form)

TITLE:

7. THIRD RAIL POWER TRIP SYSTEM

OVERALL OBJECTIVES: To assure that Communications Electronic Technicians (CET's) maintain an acceptable level of knowledge in the proper maintenance and repair of the Third Rail Power Trip System.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids, visual inspection of actual equipment and limited hands-on application.

EXAMINATION: Written examinations covering the Third Rail Power Trip System, its functions and troubleshooting.

TARGET AUDIENCE: Communications Electronics Technicians (CET's) assigned to the Communications Section.

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. Operations Rules and Procedures
2. Rail Trip System Configuration
3. Interface with DTS
4. Relay Controls
5. Traction Power
6. Troubleshooting Procedures
7. Troubleshooting Exercises
8. Safety Precautions
9. Analysis of Past Incidents

COURSE LENGTH: Sixteen (16) Hours (May be taught in full length or modular form)

TITLE:

8. WORKMANSHIP

OVERALL OBJECTIVES: To assure that Communications Electronic Technicians (CET's) maintain an acceptable level of knowledge in proper Workmanship Procedures and practices.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids, and actual chassis construction techniques in a work area.

EXAMINATION: Written examinations covering workmanship practices and standards.

Student-assembled chassis are inspected for workmanship and quality control standards as applicable to BART.

TARGET AUDIENCE: Communications Electronics Technicians (CET's) assigned to the Communications Section.

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. Crimping
2. Wire Wraps
3. Soldering
4. Component Mounting
5. Component Marking
6. Hardware Installation
7. BART Quality Standards
8. Construction Documentation

COURSE LENGTH: Sixteen (16) Hours (May be taught in full length or modular form)

TITLE:

9. BART POLICE RADIO SYSTEM

OVERALL OBJECTIVES: To assure that Communications Electronic Technicians (CET's) maintain an acceptable level of knowledge in proper maintenance and repair of the Police Radio System.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids, and some hands-on application.

EXAMINATION: Written examinations covering the BART Police Radio System, its functions and troubleshooting.

TARGET AUDIENCE: Communications Electronics Technicians (CET's) assigned to the Communications Section.

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. Security Radio Base Stations and All Associated Equipment
2. Station Antennas and Feed Arrangements
3. BPS Console and All Associated Equipment
4. Radio Test Equipment
5. Keying Systems
6. System Troubleshooting
7. Module Adjustment
8. Adjustment of a Base Station Transmitter
9. FCC Documentation
10. Safety Procedures
11. Clearance Procedures
12. Audio Adjustments

COURSE LENGTH: Forty (40) Hours (May be taught in full length or modular form)

E. ELECTRICIANS

TITLE:

1. ELECTRICAL COMPONENT FAMILIARIZATION AND BASIC PROCEDURES

OVERALL OBJECTIVES: To assure that Electricians maintain an acceptable level of knowledge in proper maintenance and repair of BART's Electrical Power Systems.

COURSE FORMAT: Classroom and field familiarization is utilized along with handouts, visual aids, and some hands-on application.

EXAMINATION: Written examinations covering the basic Electrician Procedures for maintaining BART's Electrical Power System.

TARGET AUDIENCE: Maintenance Electricians

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. BART Operations Rules and Procedures as they apply to Electricians (orange book)
2. BART Electrification Plans (red book)
3. BART's Safety Tagging System
4. 1KV DC, 34.5 KV AC, Rectifier and Breaker Safe Clearances
5. Introduction to BART Electrical Prints and Documentation
6. BART's Substation Rectifier System Familiarization Monitoring Devices and Safety
7. BART's Substation Transformer System Familiarization, Monitoring Devices and Safety
8. 34.5 KV DC Switchgear Maintenance and Operation
9. 1 KV DC Switchgear Maintenance and Operation
10. Safe Substation Battery Charger Maintenance and Operation
11. Substation Battery System Maintenance and Operation

COURSE LENGTH: Forty (40) Hours (May be taught in full length or modular form)

F. TRAIN CONTROL ELECTRONICS TECHNICIANS (TCET's)

TITLE:

1. SWITCH MACHINE TRAIN CONTROL EQUIPMENT

OVERALL OBJECTIVES: To assure that Train Control Electronics Technicians (TCET's) maintain an acceptable level of knowledge in proper maintenance and repair of Switch Machines and their associated equipment.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids, and some hands-on application.

EXAMINATION: Written examinations covering Train Control Switch Machines, their functions and troubleshooting.

TARGET AUDIENCE: Train Control Electronics Technicians (TCET's) assigned to the Communications Section.

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. Basic Hardware Layout
2. Component Parts of Track
3. GRS Model 55 Switch Machine
4. GRS Speed Frater Switch Machines

COURSE LENGTH: Twenty-Four (24) Hours (May be taught in full length or modular form)

TITLE:

2. INTERLOCKING TRAIN CONTROL EQUIPMENT

OVERALL OBJECTIVES: To assure that Train Control Electronics Technicians (TCET's) maintain an acceptable level of knowledge in proper maintenance and repair of Interlocking equipment.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids, and some hands-on application.

EXAMINATION: Written examinations covering Train Control Interlocking Equipment, their functions and troubleshooting.

TARGET AUDIENCE: Train Control Electronics Technicians (TCET's)

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. System Introduction
2. Basic Theory of Train Control Interlocking
3. Interlocking Documentation
4. Basic Relay Logic Circuits
5. Interlocking Logic
6. Power Distribution
7. Preventive Maintenance and Acceptance Tests

COURSE LENGTH: Fifty-Six (56) Hours (May be taught in full length or modular form)

TITLE:

3. MULTIPLEX AND SPEED ENCODING (MUX) TRAIN
CONTROL EQUIPMENT

OVERALL OBJECTIVES: To assure that Train Control Electronics Technicians (TCET's) maintain an acceptable level of knowledge in proper maintenance and repair of MUX equipment.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids, and some hands-on application.

EXAMINATION: Written examinations covering Train Control MUX Equipment, its functions and troubleshooting.

TARGET AUDIENCE: Train Control Electronics Technicians (TCET's)

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. System Introduction
2. Basic Timing Unit
3. Station Speed Encoding Unit
4. Wayside Multiplex System

COURSE LENGTH: Eighty (80) Hours (May be taught in full length or modular form)

TITLE:

4. NON-INTERRUPTIBLE POWER SYSTEMS (N.I.P.S.)
TRAIN CONTROL EQUIPMENT

OVERALL OBJECTIVES:

To assure that Train Control Electronics Technicians (TCET's) maintain an acceptable level of knowledge in proper maintenance and repair of N.I.P.S. Systems.

COURSE FORMAT:

Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids, and some hands-on application.

EXAMINATION:

Written examinations covering Train Control Non-Interruptible Power Systems, their functions and troubleshooting.

TARGET AUDIENCE:

Train Control Electronics Technicians (TCET's)

CYCLE:

Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. System Introduction
2. Lead-Acid Batteries
3. Westinghouse Single-Phase Battery Chargers
4. Westinghouse Three-Phase Battery Chargers
5. Westinghouse 1 to 10 KVA Inverters
6. Westinghouse High Power Inverters

COURSE LENGTH:

Eighty (80) Hours (May be taught in full length or modular form)

TITLE: 5. AUTOMATIC TRAIN CONTROL OPERATION (ATO) -
EQUIPMENT

OVERALL OBJECTIVES: To assure that Train Control Electronics Technicians (TCET's) maintain an acceptable level of knowledge and proper maintenance and repair of ATO Train Control Equipment.

COURSE FORMAT: Classroom setting, instructor-delivered instruction, supplemented with handouts, visual aids, and some hands-on application.

EXAMINATION: Written examinations covering the Train Control Automatic Train Operation System, its functions and troubleshooting.

TARGET AUDIENCE: Train Control Electronics Technicians (TCET's)

CYCLE: Upon initial hiring, every three years or as requested.

TOPICS COVERED:

1. System Introduction
2. Interfacing Equipment
3. Performance Modification and Dwell Time
4. Transmitting I.D. to Train
5. Program Stop and I.D. Transmit
6. I.D. Processors
7. Destination Sign Logic
8. ATO Documentation

COURSE LENGTH: Eighty (80) Hours (May be taught in full length or modular form)

CHAPTER V CERTIFICATION PROCEDURES

GENERAL PROCEDURES

CALIFORNIA PUBLIC UTILITIES COMMISSION (C.P.U.C.)
SEVENTH INTERIM ORDER

The California Public Utilities Commission (C.P.U.C.) issued its Seventh Interim Order, dated May 15, 1977 which, among other things, required the District to establish training, testing and certification programs for personnel whose duties may affect the safety of passengers, employees or equipment. It further required the District to submit to the C.P.U.C. within three months, a specific implementation plan for training and testing programs and certification requirements. In October of 1977 (revised in May 1981), the District issued its C.P.U.C. Certification Plan which specified in some detail how the District would comply with C.P.U.C. Interim Order Seven. The Plan was subsequently approved by the C.P.U.C.

In general, the Plan indicates that all personnel in specific classifications shall be trained and tested by means of classroom, simulation and On-The-Job (OJT) training methods, in five (5) major areas:

- a) District Operations Rules and Procedures
- b) Safety regulations pertinent to the skill
- c) Applicable departmental regulations and procedures
- d) Specific job functions and ability to perform specific job functions
- e) Impact of the employee's actions on safety

Certification and recertification of Central Control Power/Support Controller and Central Train Controllers is currently conducted by the Field Services Department. All other certification and recertification is conducted by the Department of Employee Relations, Training Division.

Specific classifications covered are:

- 1. Computer Technicians
- 2. Traction Power Electricians
- 3. Communications, Revenue Vehicle and Train Control Electronic Technicians
- 4. On-Rail Equipment Operators
- 5. Station Agents
- 6. Tower Supervisors (Foreworkers)
- 7. Line Supervisors (Foreworkers)
- 8. Train Operators
- 9. Transit Vehicle Mechanics

The numbering of personnel in those classifications totals about 1200 employees or 55% of the District's workforce of approximately 2200 employees.

The certification process is divided into two phases: Initial certification, generally given to newly hired or promoted personnel in the above classifications, and recertification, given to those employees on a two or three year cycle thereafter.

District employees required to be certified and recertified must participate in training programs and successfully pass written and performance examinations and an identified OJT Training process. Employees not meeting certification requirements cannot perform the function being certified according to both Interim Order Seven and the C.P.U.C. Certification Plan filed in October 1977 (revised May 1981).

Specific certification curriculum content for Maintenance classifications are selected from the existing Maintenance course curriculum by appropriate Maintenance management personnel.

A P P E N D I X B

P R O D U C T I V I T Y I M P R O V E M E N T P R O G R A M
F O R F Y 1 9 8 4 / 1 9 8 5

PREVIOUS EFFORTS

District efforts to increase productivity have included programs and capital projects aimed at improving BART financial effectiveness and operational efficiency. BART's Productivity Improvement Program (PIP) strategies have traditionally focused on increasing ridership, revenues, and employee output as the primary means for holding down expenses including those related to additional labor requirements and inflation. Examples of elements contained in previous PIP's include the following:

- o **Reliability Improvement Program.** Vehicle and wayside equipment improvements implemented since 1978 have resulted in improving train ontime performance from below 50% to 95%.
- o **Close Headways Program.** Train control and safety improvements implemented in the late 1970's permitted BART to increase Transbay service beginning in June 1980 from 11 trains per hour to 16 (45% increase) which also allowed for the start-up of direct Richmond/Daly City service.
- o **A-car to B-car Conversion Program.** 35 A-cars were converted to B-cars in order to maximize fleet utilization, thus providing additional online capacity.
- o **Load Factor Monitoring Program.** Passenger flows are continually monitored in order to achieve District load factor objectives while also minimizing electrical consumption by reducing excess car-miles.
- o **System Access Program.** In support of higher patronage, 30% more station parking is provided now relative to when Transbay service began in September 1974. Transit access improvements have also resulted in increased ridership and passenger revenue. These have included interoperator schedule and fare coordination, transfer agreements, and transfer facilities.
- o **Patronage Promotional Program.** Numerous co-sponsored efforts and media coverage have increased offpeak BART ridership to major Bay Area events served by the system.

The yardstick for measuring productivity gains for these and other improvements has been the annually adopted performance objectives and the five Transit Development Act (TDA) indicators, the status for which is routinely reported in the District's Quarterly Performance Report on System Objectives. Figure A on page 2 summarizes BART performance for the past 8 years with respect to selected District objectives and the 5 TDA indicators. While the expense figures show increasing values as expressed in current dollars, Figures B and C (on pages 3 and 4, respectively) reveal dramatic productivity gains when expenses are factored for inflation and expressed in constant (1978) dollars. The information presented in these two charts is solid evidence of BART productivity.

Figure A

BART SYSTEM PERFORMANCE INDICATORS

	FY 1976/77	FY 1977/78	FY 1978/79	FY 1979/80*	FY 1980/81	FY 1981/82	FY 1982/83	JUL 83-MAR 84
<u>FINANCIAL EFFECTIVENESS</u>								
Farebox ratio	36.96%	36.08	33.19%	34.35%	44.75%	45.15%	49.07%	48.80%
Operating ratio	39.15%	38.23%	36.40%	38.59%	51.16%	50.66%	53.59%	54.08%
Rail operating cost/passenger-mile	14.57¢	15.47¢	16.59¢	15.95¢	15.54¢	15.48¢	16.26¢	16.60¢
Rail operating cost/passenger**	\$ 1.87	\$ 1.97	\$ 2.02	\$ 2.05	\$ 2.09	\$2.09	\$2.19	\$ 2.17
Rail operating cost/car-hour**	\$89.79	\$87.72	\$83.59	\$96.39	\$95.45	\$106.25	\$109.65	\$115.51
Rail operating cost/car-mile	\$ 2.83	\$ 3.17	\$ 3.10	\$ 3.57	\$ 3.52	\$3.90	\$4.04	\$ 4.21
<u>SYSTEM PRODUCTIVITY</u>								
Car availability at 0800	NA	87.27%	82.43%	75.64%	85.29%	85.97%	89.12%	89.26%
Passenger-miles/seat-mile	27.00%	28.47%	25.92%	31.09%	31.41%	34.98%	34.52%	35.23%
Passenger-miles/car-hour	616.47	566.87	503.84	604.41	614.14	686.49	674.55	696.01
Passengers/car-mile**	1.51	1.61	1.54	1.74	1.69	1.87	1.84	1.94
Passengers/car-hour**	48.00	44.47	41.49	47.08	45.94	50.95	49.96	53.22
KWh/car-mile	7.42	6.50	6.33	6.46	6.19	6.16	5.78	5.64
Car-hours/equivalent employee**	465.76	448.73	510.00	493.97	580.27	541.65	595.31	588.35
<u>SYSTEM RELIABILITY</u>								
On-time performance (daily)	NA	24.8%	46.2%	88.7%	91.1%	93.3%	94.6%	95.1%
Scheduled runs completed	89%	86%	85.6%	92.9%	97.4%	98.6%	99.2%	99.1%
Unscheduled train removals/1,000 car-hours	4.3	3.4	3.3	3.7	2.3	1.7	1.4	1.5
Train offloads/1,000 car-hours	2.1	1.7	1.5	1.7	1.6	1.5	1.4	1.4

* Excludes work stoppage period, September 1 to November 25, 1979

** TDA required indicator

Figure B

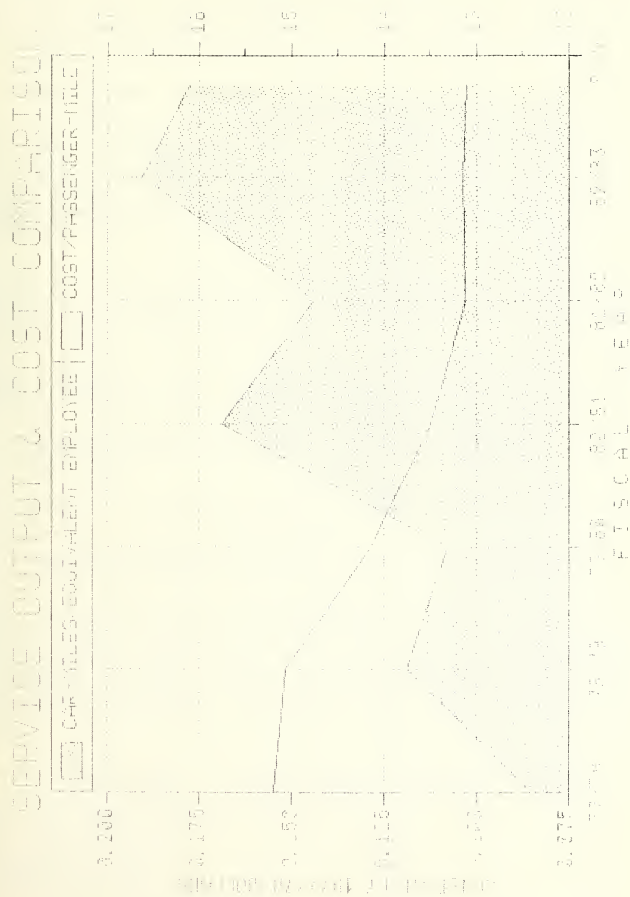
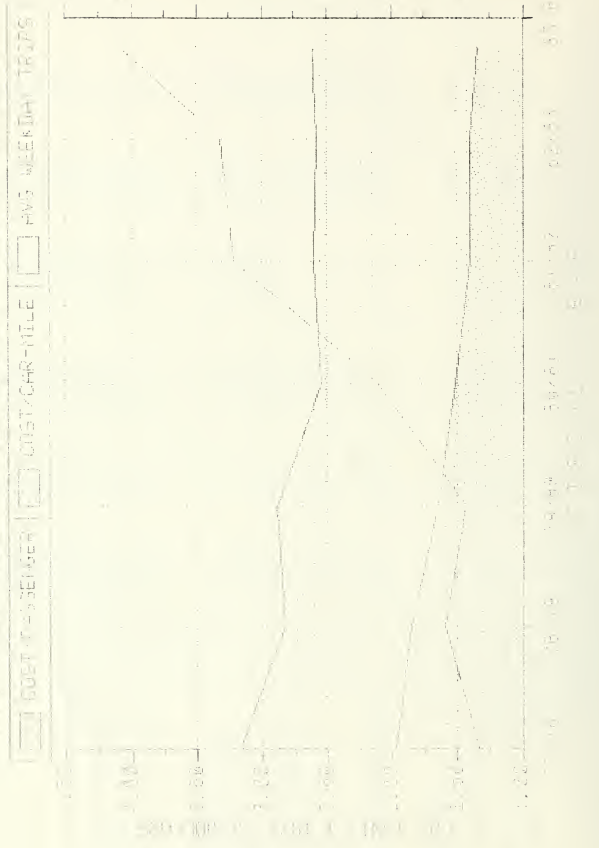


Figure C

PATROLMAN HVD COST COMPARISON



STATUS OF BART'S FY 1983/84 PRODUCTIVITY IMPROVEMENT PROGRAM

The District's PIP for FY 1983/84 built upon previous efforts with particular focus on increasing offpeak and reverse commute ridership through special promotions and multi-modal access improvements. The individual elements contained in the FY 1983/84 program and their status is reviewed in Figure D on page 6.

FY 1984/85 PRODUCTIVITY IMPROVEMENT PROGRAM

BART's PIP for FY 1984/85 has been developed around Dr. Pete Fielding's "Framework for Transit Performance" which is based on three service related functions: input, output, and consumption. Figure E on page 7 conceptualizes this framework as a triangle with each service function serving as a point on the triangle. Examples of measures are also shown as related to each service function. Further, performance indicators are defined by combining measures and expressing the result in terms of a ratio or percentage.

As shown, the framework defines the resulting indicators in terms of cost-effectiveness (the combination of service input and service consumption), cost-efficiency (service input combined with service output), and service-effectiveness (service output plus service consumption).

BART's FY 1984/85 PIP includes three components which address both short- and long-term productivity issues. Figure F on page 8 summarizes these components in terms of the Fielding Framework. Briefly, these are:

Capacity Expansion Program which should produce longer term productivity improvements in terms of cost-efficiency, cost-effectiveness, and service-effectiveness.

New Service FY 1984/85 which provides for an interim peak period capacity increase on a service-effective basis.

Comprehensive Marketing Program which is a cost-effective means of attracting additional offpeak and reverse commute ridership.

The following sections describe these components in more detail with the presentation oriented around the Fielding framework. The thrust of this program is toward continued productivity gains in both the short-term (during FY 1984/85) and longer-term (beyond July 1985). BART performance for the first three quarters of FY 1983/84 with respect to the five TDA indicators is shown below. FY 1984/85 target levels are also shown. A key mechanism for achieving these improved levels of performance is the PIP, the details of which are presented in the following section.

TDA INDICATOR	JUL 83-MAR 84 PERFORMANCE	FY 1984/85 TARGET
Rail Operating Cost/Passenger	\$ 2.17	\$ 2.34
Rail Operating Cost/Car Hour	\$115.51	\$129.33
Passengers/Car Mile	1.94	2.01
Passengers/Car Hour	53.22	55.26
Cars Hours/Equivalent Employee	588.35	N.A.

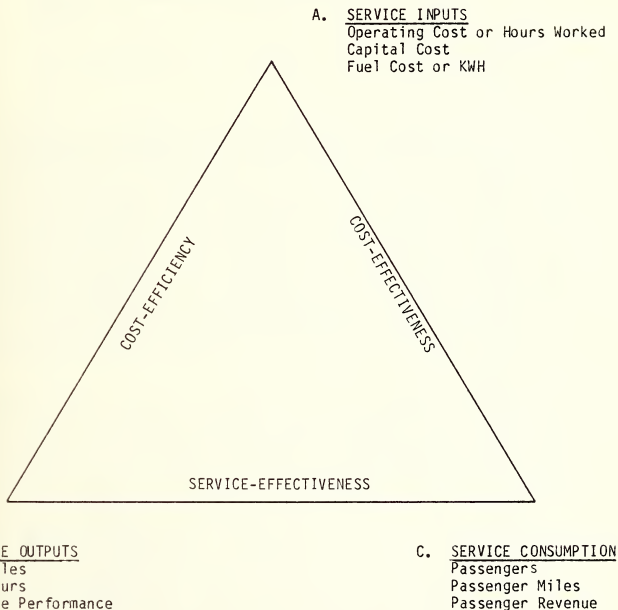
Figure D

STATUS FOR FY 1983/84 PRODUCTIVITY IMPROVEMENT PROGRAM OBJECTIVES

PIP ELEMENT	OBJECTIVE	JUL 83-MAR 84 STATUS	COMMENTS
Patronage Promotion	103,200 average weekday offpeak trips by June 1984	97,171	Growth for BART/MUNI and regular BART ticket trips is expected to result in a year end average approaching this offpeak objective.
	5,900 peak period transbay reverse commute trips per weekday by June 1984	6,213	Increased East Bay employment opportunities and strengthening economy assisted in achieving this objective.
Multi Modal Access Improvement	10% of Oakland Coliseum gate attendance for major events	14%	BART's marketing efforts have resulted in substantial BART access to events at the Coliseum.
	204,400 average weekday trips by June 1984	201,647	Growth for BART/MUNI and regular BART ticket trips is expected to yield 206,00 per weekday by June 1984.
	Develop Access Implementation Program by January 1984	Expected completion in Dec 1984	Staff temporarily reassigned to express bus planning. Staff focusing on implementation of currently funded projects.
	200 additional parking spaces at Union City Station by December 1983	117 spaces opened by Dec 83 234 opened by Jan 84	Discussions continuing for additional projects.
	Secure city approvals for 5 to 10 parking lot redesign projects by April 1984	Concurrence obtained for 5 projects	An 11-day survey indicates BARTPOOL occupancy between 64% and 38% for high and low usage weekdays.
	Maximize BARTPOOL participation	435 BARTPOOL spaces provided	Unavailability of data for express bus/rail transfers severely limits the usefulness of this indicator.
	Maximize ratio of transferring express bus passengers to bus operating hours	Estimated to be 7.1	Delay in COCTA taking over service.
	Restructure M-express bus route by February 1984	Route not to be re-structured until Dec 1984	AC Transit assumed to continue to operate service.
	Develop express bus contract specifications by January 1984 and put out to bid	Contract proposal forwarded to AC in April 84	
	Maximize intra San Francisco patronage	36,033 average weekday trips 13,131 for Saturdays 6,509 for Sundays	Total BART/MUNI Fast Pass trips constitute 46.8% of all intra SF-BART trips. Average weekday pass usage has grown from 11,723 in April 1983 to 19,061 by March 1984 (62.6% increase).

Figure E

A FRAMEWORK FOR TRANSIT PERFORMANCE
(as developed by Dr. Pete Fielding)



INDICATOR EXAMPLES

Cost Efficiency (A/B): KWH/car-hour

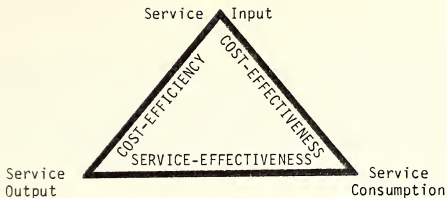
Cost Effectiveness (C/A): Passenger revenue/operating cost

Service Effectiveness (C/B:) Passenger-miles/car-mile

Figure F

PART FY 1984/85 PRODUCTIVITY IMPROVEMENT PROGRAM

PRODUCTIVITY COMPONENT	PRODUCTIVITY GAINS (Per Fielding Framework)			PRODUCTIVITY COMPONENT TYPE	TIMEFRAME TO REALIZE GAINS
	A. Service Input	B. Service Output	C. Service Consumption		
Capacity Expansion Program	Power Cost	Service Frequency Capacity Reliability Flexibility Car Hours Car Miles	Ridership Passenger Revenue Peak Load Factors	Cost-Efficiency (A:B) Cost-Effectiveness (A:C) Service-Effectiveness (B:C)	Long Term -- Beginning mid 1987
New Service FY 1984/85		Service Frequency Capacity Parking Capacity	Ridership Passenger Revenue Peak Load Factors	Service-Effectiveness (B:C)	Short Term -- beginning Fall 1984
Comprehensive Marketing Program	AC/BART Coord. Passenger Info. Ticket Availability AFC Usage		Ridership Passenger Revenue Offpeak/Reverse Commute Load Factors	Cost-Effectiveness (A:C)	Short Term -- beginning mid 1984



CAPACITY EXPANSION PROGRAM

ISSUES: Ridership projections indicate that BART demand, especially during peak periods, could rise significantly. However, BART is essentially operating at capacity during peak periods with virtually all available cars in use to form 43 on-line trains. The system now operates at its current maximum sustainable frequency, 16 trains per hour (3' 45" headway) in the peak direction. Service and capacity expansion beyond this level are limited by a number of critical constraints including an inefficient turnback facility at Daly City, CPUC imposed operating procedures which call for a backup train detection system and minimum vent separation (train spacing) requirements in subways, and train merging through the Oakland Wye. Further, BART's existing central train control computer is limited to the operation of 49 on-line trains (just six more than under current operations). Likewise, the current A-car automatic train control system is approaching its useful life and represents the largest single cause of service disrupting failures on the system.

IMPROVEMENTS: BART's Capacity Expansion Program is a multi-year effort designed to provide significantly higher system capacity, safety and reliability, so that many more people can ride throughout the three counties. As summarized in Figure F on page 10, this long-term program includes a more efficient turnback facility at Daly City with a storage/maintenance yard, 150 new C-cars, a new integrated train supervision system (ICS), new vehicle automatic train control system, and a third subway track through the Oakland Wye. Additionally, all existing A- and B-cars will be fire hardened as a prerequisite to eliminating the CPUC vent separation requirement. Integral to the Capacity Expansion Program are the Primary Train Detection and System Performance Studies. The former is to determine what modifications to the existing train detection system will be required, if any, so that SORS (backup detection system) constraints can be eliminated and headways reduced below three minutes, ten seconds. The latter study will analyze and evaluate higher levels of operation in an attempt to identify additional system modifications which may be necessary to facilitate even shorter headway operations without compromising safety and reliability.

OBJECTIVE: To realize a greater share of BART's potential through a program to increase capacity and operational efficiency and flexibility without compromising safety and reliability. Objectives for FY 1984/85 of this multi-year program are to maintain adherence to project schedules as indicated by achievement of programmed interim milestones.

INDICATORS: (As measured by the achievement of the following)

PROJECT	FY 1984/85 PIP OBJECTIVE	PROJECT COMPLETION
Primary Train Detection Study	Study complete by July 1984	Jul 1984
System Performance Study	Study complete by July 1984	Jul 1984
New Vehicle ATC	Prototype delivery by September 1984	Jan 1985
KE Track	Begin installation of train control by February 1985	Nov 1985
Fire Hardening	Complete 280 cars by June 1985	Dec 1985
ICS	Complete component testing by June 1985	Jun 1986
Daly City Turnback	Design complete by September 1984	May 1987*
C-Cars	Prototype delivery by April 1985	Jun 1987
Daly City Yard	Design complete by December 1984	Dec 1987*
* Provided Letter of No Prejudice received by May 1984.		

Once these capital projects are complete and future service expansion is implemented, BART expects the following types of productivity improvements to result from this program:

- ° Cost-Efficiency gains, e.g., KWH per car mile.
- ° Cost-Effectiveness gains, e.g., operating cost per passenger mile.
- ° Service-Effectiveness gains, e.g., passenger miles per seat mile (system utilization).

BENEFITS: As summarized in Figure F on page 12, completion of fire hardening, KE track, ICS, and the Daly City turnback will allow headways to be reduced to 3' 10" by July 1987 (19 trains per hour per direction) with 53 trains on line. Completion of the Daly City Yard and New Vehicle ATC, and other modifications identified by the Primary Train Detection and System Performance Studies, are expected to result in a minimum scheduled headway of 2' 15" after July 1989. In addition to the benefits in terms of capacity, are those relating to operational efficiency and flexibility, primarily due to the new C-car design, KE track, and Daly City Yard. The C-cars will permit trains to be properly sized while on line, rather than requiring extra time and vehicles for yard sizing as is presently done. The new yard will permit midday layups in the Westbay, avoiding

unnecessary trips to and from existing Eastbay storage facilities. These projects together are expected to significantly reduce excess car miles (by allowing capacity to be more closely tailored to demand) which will reduce power consumption. The KE track will greatly increase operational flexibility in the central section of the system where route merging activity occurs. Largely as a result of these improvements, BART average weekday ridership is expected to increase from 212,000 in FY 1984/85 to 277,300 by FY 1988/89.

Figure 6

BART CAPACITY EXPANSION PROGRAM

Minimum Scheduled Headway	Projects Required to Achieve or Support This Headway	Project Completion Dates	Expanded Service Start Dates	Peak Hour Trains, Peak Direction	Peak Period Capacity Trains ^a	Peak Period Capacity One-Line Cars	Spare Cars	Total Cars Required	Available Fleet A/C - Cars # 85% B - Cars # 90%	Operating Fleet Size
3' 45"	Current Service	---	Jul 1980	16	43 ^b	321 ^b	40 ^b	361	368 ^c	436
	Pending successful simulation & implementation of train control mode	Jun 1984	Fall 1984	17	45 ^b	327 ^b	40 ^b	367	371 ^d	439
3' 30"	Fire hardening (cars completed)	Dec 1985	Dec 1985	17	45 ^b	338 ^b	40 ^b	378	387	439
	Delivery of 32 C-cars	Mar 1986	Apr 1986	17	48 ^b	369 ^b	40 ^b	409	414	471
3' 10"	KE Track	Nov 1985								
	Fire hardening (removal of vent separation)	Dec 1985								
	ICS	Jun 1986								
	Daily City Turnback	May 1987 ^e								
	Delivery of 78 additional C-cars	Jan 1987	Jul 1987	19	53	408	57	465	480	549
2' 30"	Daily City Yard	Dec 1987 ^e								
	New On-Board ATC	May 1987								
	Delivery of 40 additional C-cars (150 total)	Jun 1987								
	Primary Detection Project: Wayside ATC Modifications	To Be Determined ^g								
	To be determined based on System Performance Study	Completion of SPS, Jul 84	Jul 1988 ^h	24	62	437	62	499	514	589
2' 15"	To be determined based on System Performance Study	Completion of SPS, Jul 84	Jul 1989 ^h	26	74	452	62	514	514	589

a. Number of consists on-line; throughput equivalent to one extra train (on Richmond/Daly City Route).

b. One 7-car consist is scheduled for revenue service but is reserved as a spare when required (included in the "On-Line" column). This consist will be lengthened when the KE Track becomes operational, and this consist can be laid up there.

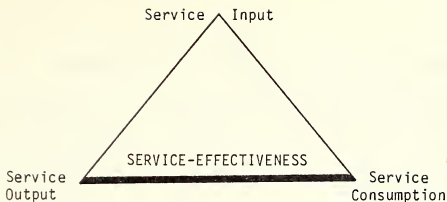
c. Excluding 16 vehicles out for fire hardening and three damaged cars out awaiting repairs. Includes 7 more A-cars than can be put in service due to headway constraints limiting the total number of trains on-line.

d. Excluding 16 vehicles out for fire hardening; three damaged cars returned to service following completion of repairs.

e. Provided Letter of No Prejudice received by May 1984.

f. Includes PUC approval.

g. Depends on results and recommendations of Train Detection Study.



NEW SERVICE FY 1984 / 1985

ISSUES: For the reasons cited in the previous section (refer to the issues presented in the Capacity Expansion Program), BART is essentially operating at capacity at the present time. Very little peak period, peak direction ridership growth is expected to take place until additional capacity can be provided. Maximum load factors currently average 1.4 systemwide during the peak hour and just under 1.3 during the balance of the peak period (45 minutes before and after the peak hours). Additionally, at-capacity parking facilities at nearly all of BART's 23 stations, where over 22,000 spaces are currently provided, represent a deterrent to many who would like to use the system.

IMPROVEMENTS: Two additional peak period Transbay trains will be provided, one in the peak hour and one in the balance of the peak period. This new service is to be supported by 1,190 additional parking spaces at four stations, also to be provided during FY 1984/85.

Although all available B-cars are now scheduled for service, extra A-(lead) cars are available. Until the fire-hardening program is completed, these cars represent the only possible increase in capacity. By combining these extra A-cars with some B's transferred from less heavily loaded trains, BART will be able to increase capacity in the peak of the peak period.

Therefore, BART plans to operate two additional trains beginning in the latter part of 1984: one on the Fremont/Daly City route during the peak hour, with the other on the Concord/Daly City route during the balance of the peak period. This service increment is shown together with the succeeding increments made possible by the implementation of the Capacity Expansion Program in Figure F on page 10. (The completion of the Capacity Expansion Program is expected to result in a service increase of 63% for Transbay trains and 72% for total on-line trains, as minimum scheduled headways are reduced from the current 3' 45" to 2' 15".)

The 1,190 new parking spaces are to be provided under the District's Parking Lot Redesign Project which will increase BART's parking space inventory through more effective use of existing facilities.

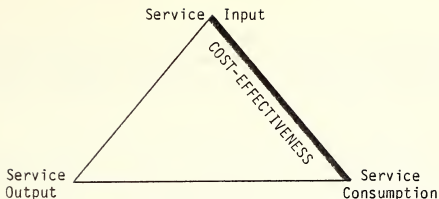
OBJECTIVE: To provide some additional capacity during FY 1984/85 before the longer-term increases resulting from the Capacity Expansion Program can be realized.

INDICATORS: (As measured by the achievement of the following)

SERVICE-EFFECTIVENESS INDICATOR	FY 1984/85 PIP OBJECTIVE	FY 1983/84	STATUS
		OBJECTIVE	ACTUAL *
Passenger Miles/Seat Mile	36.2%	35.2%	35.3%
Patron On-Time Performance	94.0%	(none)	93.8%
Implementation Date for two Additional Trains	Oct 84	---	---
New Parking Spaces to be Provided:			
South Hayward	213	---	---
El Cerrito Del Norte	557	---	---
Concord	193	---	---
Lafayette	227	---	---
Total	1,190		
*July 1983-March 1984 data			

COSTS: The estimated cost for operating the two additional trains during FY 1984/85 (for 9 months) is \$286,000. The cost for providing the additional parking is estimated to be approximately \$1.2 million.

BENEFITS: The addition of two peak period trains in late 1984 and 1,190 more parking spaces during the year will allow more people to ride BART for their daily commute to and from work as well as for other travel purposes. Load factors on the two most heavily traveled routes, Concord and Fremont/Daly City, are expected to be reduced initially, and then gradually rise to their former levels as ridership increases.



COMPREHENSIVE MARKETING PROGRAM

ISSUES: BART is virtually operating at capacity at the present time during the peak period in the primary demand direction. The lack of a Westbay storage yard and the inability to shorten trains while on line requires the complete cycling of this maximum capacity (43 trains) back to the Eastbay maintenance yards. While these trains operate in the primary demand direction at load factors averaging 1.40, the same 43 trains in the reverse commute direction average well under a 1.00 load factor. Since this capacity cannot effectively be reduced, every effort must be made to improve its utilization through increased reverse commuting. After returning to the yards, peak period trains are shortened and redispached for lower offpeak demand. Improved offpeak utilization is also essential.

A second issue is the decline in the availability of off-site BART ticket outlets which occurred when a number of banks and savings and loans discontinued this service. This has made it more difficult for patrons to purchase BART high value and discount tickets, the latter of which are only available through these outlets.

A third issue is the need to replace outdated maps located in stations. This is linked to an overall need for improved station signing and information which clearly indicates key locations and places of interest in the vicinity of stations, as well as information relating to BART use and transfers to connecting transit services.

IMPROVEMENTS: BART marketing activities are to be substantially expanded starting in FY 1984/85. A Comprehensive Marketing Program presently under development will address short- and long-term opportunities for increasing system utilization through increased offpeak and reverse commute ridership. While the details of the program are currently being defined, an important aspect will be to expand the number of off-site ticket sales outlets under the "Tickets-To-Go" program from 50 currently to 200, and to install a prototype passenger information center at Oakland City Center-12th Street Station (similar to the Regional Transit Association (RTA) information center located at the Transbay Terminal in San Francisco). As part of the overall program to increase offpeak ridership, BART marketing efforts during FY 1984/85

will include the promotion of 18 special events plus the cooperative promotion of major sporting/entertainment activities to be held at various facilities served by BART. A major promotion targeted for specific market segments is also planned for FY 1984/85, which is to include additional Sunday service between Thanksgiving and Christmas.

During FY 1984/85, improved service coordination with AC Transit is also expected to result in significant BART ridership gains. Plans call for increasing the productivity of both Districts' operations by taking advantage of BART's ability to accommodate substantially higher ridership during the offpeak. This is to be accomplished by reducing the level of offpeak parallel bus service and selective route restructuring to provide more cost-effective transit access to and from BART stations.

OBJECTIVE: To increase BART system utilization and cost-effectiveness through increased offpeak and reverse commute ridership, to be realized by improved passenger information, more effective service coordination with AC Transit, and added ticketing convenience.

INDICATORS: (As measured by the achievement of the following)

COST-EFFECTIVENESS INDICATOR	FY 1984/85 PIP OBJECTIVE	FY 1983/84 STATUS	
		OBJECTIVE	ACTUAL *
Rail Operating Cost/Passenger Mile	18.0¢	18.1¢	16.6¢
Farebox Ratio	45.5%	40.0%	48.8%
Passenger Revenue/Seat-Mile	3.2¢	3.1¢	3.0¢
Number of Off-site ticket sales outlets	200	(None)	50
Operating Cost/Passenger Revenue (for offsite ticket outlets)	4.6%	(None)	N.A.
* July 1983 - March 1984 data			

COSTS: The cost of implementing the District's Comprehensive Marketing Program during FY 1984/85 is estimated to be \$850,000.

BENEFITS: Improved service coordination with AC Transit, increased BART ticket availability, more up-to-date and effective signing, and special promotional campaigns are expected to increase BART ridership and revenue generation. These increases should reduce BART's operating cost on a passenger-mile basis while resulting in higher levels of productivity and cost-effectiveness as a larger share of operating costs are covered by passenger revenue. Further, increased off-site ticket sales will reduce usage of station ticket vending machines. This will result in fewer failure incidents and subsequent patron delays.

A P P E N D I X C

P U B L I C C O M M E N T



City of Fremont

39700 Civic Center Drive
Fremont, California 94538

May 17, 1984

Mr. Keith Bernard, General Manager
Bay Area Rapid Transit District
800 Madison Street
Oakland, California 94604-2688

Re: Draft 1984 Short Range Transit Plan

Dear Mr. Bernard:

In reviewing the subject document, I was happy to see that BART plans to complete the improvement and expansion of parking at the Fremont BART Station prior to December 1985.

The document indicates there was a 6 percent increase in patronage at the Fremont station in 1983. With increasing patronage and a reluctance on the part of many patrons to use the existing unimproved lot, there is an increasing demand for on-street parking in the vicinity of the BART station. Efforts to expedite this project would be appreciated.

I look forward to receiving a report from your staff on the progress of this project, including a final response on our request that completion of Mowry Avenue street improvements along the parking lot frontage be included with project.

Sincerely,

1
T. M. BLALOCK, P.E.
Public Works Director
(415) 791-4167

TMB:mb

cc: Traffic Engineer



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 465-4100

June 19, 1984

ARTHUR J. SHARTSIS
PRESIDENT

NELLO BIANCO
VICE-PRESIDENT

KEITH BERNARD
GENERAL MANAGER

Mr. T. M. Blalock, P. E.
Public Works Director
City of Fremont
39700 Civic Center Drive
Fremont, CA 94538

Dear Mr. Blalock:

This is a response to your letter of May 17, 1984 concerning the Draft 1984 BART Short Range Transit Plan.

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT

NELLO BIANCO
2ND DISTRICT

ARTHUR J. SHARTSIS
3RD DISTRICT

MARGARET K. PRYOR
4TH DISTRICT

ROBERT S. ALLEN
5TH DISTRICT

JOHN GLENN
6TH DISTRICT

WILFRED T. USSERY
7TH DISTRICT

EUGENE GARFINKLE
8TH DISTRICT

JOHN H. KIRKWOOD
9TH DISTRICT

You expressed support for District plans to complete parking improvements at the Fremont Station now scheduled for December 30, 1985. You also reiterated the city's request that completion of Mowry Avenue street improvements along the parking lot frontage be included in the project.

As you may recall, on April 24, 1984, Howard Goode, BART's Department Manager of Planning & Analysis, wrote explaining our proposed project at Fremont Station. That letter provides details of the project scope, schedule and cost.

In the April letter, we indicated that project funding was under review, and that funding approval was expected by June 1984. Unfortunately, UMTA is still reviewing our application, and we do not expect to receive the funds before July. This delay should not adversely affect the December 30, 1985 completion date. Although it appears that the scheduled completion date cannot be advanced, the project will be constructed in phases and we plan to have a portion at the lot paved and open for use prior to December 30, 1985.

The Mowry Avenue improvements which you referenced are included in the project scope.

As soon as funding is obtained, our staff will meet with yours to finalize project details.

One of the reasons the lot is not fully utilized is due to the inability of our patrons to make a left turn when leaving the lot. I was instrumental in procuring and building the lot at the site to prevent Santa Clara County residents from filling

Mr. T. M. Blalock
June 19, 1984
Page Two

the spaces before the Fremont residents arrived. However, the majority of residents from Fremont come from the west, but must turn east when leaving the lot. I had spoken to the mayor and several council persons about the problem, and they instructed me to make the request for the city to build a westbound left turn lane. I am hereby making that request.

Sincerely,

John Glenn
Director, District 6



Engineering Division - 439-4915
CIVIC CENTER • P.O. BOX 1518 • PITTSBURG, CALIFORNIA 94505

May 18, 1984

Mr. Keith Bernard
Bay Area Rapid Transit District
Post Office Box 12688
Oakland, CA 94604-2688

Re: BART's Five-Year Short Range Transit Plan (SRTP)
July 1984 to June 1989

Dear Mr. Bernard:

We have reviewed the draft five-year Short Range Transit Plan (SRTP) and have the following comments and/or questions:

1. Page II-27 indicates that the Bailey Road 200 space Park and Ride lot is to be completed during Fiscal Year 1984/85. This seems contradictory to Page III-58 Project 04GA which shows the completion date of TBD (no explanation of TBD, but we assume it means "to be determined") and Page III-7 Project 04GA which indicates this project as being unfunded.

2. Project 04AC EIR and Preliminary Engineering; Line PH I, Page III-11 - Which line is PH I, and if not the North Concord/West Pittsburg extension, why hasn't the necessary EIR and Preliminary Engineering for the North Concord/West Pittsburg extension been included in the five-year SRTP?

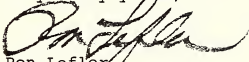
3. Project 99*02 Extensions Right-of-Way Acquisition - More detail should be provided as to what specific rights-of-way are to be acquired in the 1984/85 to 1988/89 five-year SRTP. Is the allocation for future station sites alone or for track right-of-way as well?

4. More specific details on what activities will take place in regards to each project extension in Priority I over the next five years and tentative construction and completion dates beyond the five-year plan would be extremely helpful to locally affected cities and agencies.

Mr. Keith Bernard
BART's Five-Year S RTP
May 18, 1984
Page Two

Your response to the above would be appreciated.

Very truly yours,



Ron Lefler
City Engineer

ljc

xc: S. Anthony Donato
Mary Erbez
J. W. Abraham



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 465-4100

June 15, 1984

ARTHUR J. SHARTSIS
PRESIDENT
NELLO BIANCO
VICE-PRESIDENT
KEITH BERNARD
GENERAL MANAGER

Mr. Ron Lefler
City Engineer
City of Pittsburg
P. O. Box 1518
Pittsburg, CA 94565

Dear Mr. Lefler:

This is in response to your letter of May 18, 1984 concerning the Draft 1984 BART Short Range Transit Plan.

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT
NELLO BIANCO
2ND DISTRICT
ARTHUR J. SHARTSIS
3RD DISTRICT
MARGARET K. PRYOR
4TH DISTRICT
ROBERT S. ALLEN
5TH DISTRICT
JOHN GLENN
6TH DISTRICT
WILFRED T. USSERY
7TH DISTRICT
EUGENE GARFINKLE
8TH DISTRICT
JOHN H. KIRKWOOD
9TH DISTRICT

You raised four questions regarding the status of BART capital projects planned for the Pittsburg area. In response to your questions:

1. Funding for the Bailey Road 200-space Park and Ride lot is now secured and the scheduled completion date for this project is July 30, 1985.
2. Project 04AC "EIR and Preliminary Engineering P-line PH I" refers to the North Concord Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS).
3. Project 99* 02 "Extensions Right-of-Way Acquisition" includes the following during FY 1984/85 through FY 1988/89:

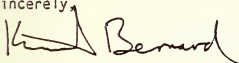
At present, BART staff is working on the expansion of the North Concord AA/DEIS to include West Pittsburg.

<u>Extension</u>	<u>Usage</u>
Pittsburg-Antioch	West Pittsburg Station
Warm Springs	Track Alignment
Livermore-Pleasanton	Castro Valley Station
Pittsburg-Antioch	Antioch Station (Hillcrest Ave.)
Warm Springs	Irvington Station (5.8 acres)
Livermore-Pleasanton	Dublin Station

Mr. Ron Lefler
June 15, 1984
Page Two

4. Currently, because of uncertainty regarding the availability of federal funding for construction of rail transit projects, it is not possible yet to schedule extension construction. MTC's program for new starts and extensions contemplates a 16-year period for the full program. Our objective is to do better than the MTC timetable. We appreciate your concern and will advise as soon as more definite information is available.

Sincerely,

A handwritten signature in dark ink, appearing to read "Keith Bernard". The signature is fluid and cursive, with the first name "Keith" written in a more compact, stylized manner and the last name "Bernard" written in a more extended, flowing script.

Keith Bernard
General Manager

cc: Director Nello Bianco

May 23, 1984

Mr. Arthur J. Shartsis, President
Board of Directors
Bay Area Rapid Transit District
800 Madison Street
Oakland, California 94607

Dear President Shartsis:

The Board of Directors of the Oakland Chamber of Commerce at their meeting on May 9, 1984 unanimously approved the following recommendation which we ask that you consider for inclusion in the 1984 Five-Year Transit Plan:

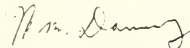
That the BART Board of Directors amend their Five-Year Plan and their planning process to include the concern of Oakland on the availability of adequate train capacity for people who originate in the Oakland Central Business District. In the event that the continuing studies show that the increased capacity that will be on line by mid-1988, after the completion of the Capacity Expansion Program, does not relieve the situation, that BART consider instituting such other means as train origination for the City Center and 19th Street stations as might be necessary in order to improve the situation.

This recommendation followed review by our Transportation Committee which is working closely with the major developers and with public officials in ensuring that the Oakland Central Business District is adequately served by BART, particularly as the Capacity Expansion Program reaches completion by mid-1988.

Our Committee did learn that it is possible that once the Expansion Program is complete, with the 150 new cars on line and the tail track in place in Daly City, that there could be a seventy percent improvement in service. It is possible that there would not be the current problem in Oakland where patrons during peak commute hours are often denied seating or indeed even access to the crowded trains. These inconveniences act as a disincentive for business to locate here, and, indeed, encourage continued use of automobiles.

We did learn from BART representatives on our Committee that projections developed by BART show that at the present time there is insufficient patronage to warrant train origination in Downtown Oakland. In making the recommendation to our Board of Directors, the Transportation Committee did not want to leave the matter to chance. I would be happy to discuss this matter in greater detail with you or with members of the BART staff.

Sincerely,



William S. Downing,
President and CEO

WSD:sw

cc: BART - Directors Pryor and Ussery
- General Manager Keith Bernard
David I. Wendel, Chairman, Transportation Committee



Oakland
Chamber of
Commerce

1939 HARRISON STREET
OAKLAND, CA 94612-3584
TELEPHONE 415 / 451-7800



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 465-4100
July 3, 1984

Mr. William S. Downing
President and CEO
Oakland Chamber of Commerce
1939 Harrison Street
Oakland, CA 94612-3584

ARTHUR J. SHARTSIS
PRESIDENT

NELLO BIANCO
VICE-PRESIDENT

KEITH BERNARD
GENERAL MANAGER

Dear Mr. ^{Bill} Downing:

My writing is prompted by your letter to President Shartsis of May 23, 1984 containing comments on the Draft 1984 BART Short Range Transit Plan.

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT

NELLO BIANCO
2ND DISTRICT

ARTHUR J. SHARTSIS
3RD DISTRICT

MARGARET K. PRYOR
4TH DISTRICT

ROBERT S. ALLEN
5TH DISTRICT

JOHN GLENN
6TH DISTRICT

WILFRED T. USSERY
7TH DISTRICT

EUGENE GARFINKLE
8TH DISTRICT

JOHN H. KIRKWOOD
9TH DISTRICT

You advised that the Chamber unanimously approved a recommendation that BART recognize the need for adequate train capacity in the Oakland Central Business District, and further, if planned service expansions do not improve capacity relative to demand originating in the Oakland CBD District by mid-1988, that BART consider instituting other means such as trains serving the Oakland CBD primarily.

Attached you will find a comparison of BART service to and from the Oakland and San Francisco CBD's in terms of train load factors (riders per seat) in the P.M. peak period for the January-March 1984 fiscal quarter. This shows that, with the exception of service to Concord, P.M. peak period train capacity into and out of the Oakland CBD is generally better than that enjoyed by riders leaving the San Francisco CBD toward the East Bay.

These figures represent averages for all trains, whether 10 cars or less. Although BART cannot lengthen 10-car trains, load factors for each train are carefully monitored and, as loads on trains shorter than the 10-car maximum increase, cars are reassigned from less heavily loaded trains so that load factors on these "discretionary" trains are equalized between routes.

Later this year, BART plans to add two peak period trains, one each between Concord and Fremont, and San Francisco. This service increase should benefit riders between the Concord line and the Oakland CBD.

In the future, growth in demand will undoubtedly require a reexamination of planned BART service configurations, with the possible addition of Concord-Fremont service which would not be impacted by Transbay patronage. The possibility of originating trains in Oakland using the flexibility of the KE track will also be explored.

Mr. William S. Downing

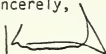
Page Two

July 3, 1984

Currently, however, future demand projections would support continued addition of Concord-Daly City trains which would service both the Oakland and San Francisco CBD's. Of the 19 trains to be added during the upcoming 5 years to the current 43-train peak period service, approximately half are tentatively programmed for Concord-Daly City service. This expansion should ease the crowding faced by patrons originating in the Oakland CBD who are traveling toward Concord.

The above notwithstanding, it will always be our intent to continually monitor demand and service in an effort to match the two in the most effective and equitable manner possible.

Sincerely,

A handwritten signature in black ink, appearing to read 'Keith Bernard', with a stylized flourish at the end.

Keith Bernard
General Manager

Attachment

cc: President Arthur J. Shartsis
Director Margaret Pryor
Director Wilfred Ussery



COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY

399 Elmhurst Street • Hayward
(415) 881-6470

May 24, 1984

Mr. Keith Bernard
General Manager
Bay Area Rapid Transit District
800 Madison Street
P. O. Box 12688
Oakland, CA 94604-2688

Dear Mr. Bernard:

Subject: Property Acquisition for the Castro Valley
and Dublin Stations

I am in receipt of your draft "1984 Short Range Transit Plan." After reviewing its contents, I feel the need to call for the expediting of the property acquisition activities concerning the Castro Valley and Dublin stations.

While BART already owns 9.7 of the proposed 11.9 acres for the Castro Valley station; acquisition of the remainder of the property should not be postponed to FY 1986/87 or beyond. Likewise, procurement of the Dublin station property should proceed as expeditiously as possible. This 14.0 acre site availability is already threatened by commercial development and associated escalating costs.

While the cost of such acquisition is no doubt high, the costs of foregone opportunity is even higher. I urge you to accelerate your acquisition efforts where these two station sites are concerned. If County staff can assist in any way toward the acceleration of these acquisitions, please do not hesitate to contact me at 881-6477.

Very truly yours,


HARRY R. HECHT
ASSISTANT DIRECTOR OF PUBLIC WORKS

HRH:GK:cd



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 465-4100

June 15, 1984

ARTHUR J. SHARTSIS
PRESIDENT
NELLO BIANCO
VICE-PRESIDENT
KEITH BERNARD
GENERAL MANAGER

Mr. Harry R. Hecht
Assistant Director of Public Works
County of Alameda
399 Elmhurst Street
Hayward, CA 94544-1395

Dear Mr. Hecht:

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT
NELLO BIANCO
2ND DISTRICT

ARTHUR J. SHARTSIS
3RD DISTRICT

MARGARET K. PRYOR
4TH DISTRICT

ROBERT S. ALLEN
5TH DISTRICT

JOHN GLENN
6TH DISTRICT

WILFRED T. USSERY
7TH DISTRICT

EUGENE GARFINKLE
8TH DISTRICT

JOHN H. KIRKWOOD
9TH DISTRICT

I am writing in response to your letter of May 24, 1984 regarding the Draft 1985 BART Short Range Transit Plan.

You have urged BART to expedite property acquisition activities associated with the proposed Castro Valley and Dublin Station sites.

Regarding the proposed Castro Valley Station site, BART has acquired a total of 9.7 acres which would accommodate approximately 900-1,000 parking spaces, the projected year 2000 demand. Since the Castro Valley area is relatively mature, 900-1,000 parking spaces may be sufficient beyond the year 2000. However, if additional parking is required at that time, either part of the parking area could be decked or the site could be expanded.

Regarding the proposed Dublin Station, BART staff has initiated right-of-way acquisition efforts.

We appreciate your interest in and support for this part of our proposed extension program.

Sincerely,

Keith Bernard
General Manager

cc: Director Robert Allen



CITY OF PLEASANTON

June 14, 1984

Ms. Barbara A. Neustdter,
Manager Planning
BART
800 Madison Street
Oakland, California

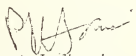
RE: BART Short Range Transit Plan 1984/89

Dear Ms. Neustdter:

At their meeting of June 12, 1984 the City Council considered the BART Draft Short Range Transit Plan. They were particularly interested in that portion of the plan dealing with the BART express bus service and comments which were made with regard to the reappraisal of that system. They felt that it is important that BART conclude their negotiations with the owners of that portion of the Dublin Station site within Pleasanton as rapidly as possible and that once the site is purchased that BART establish an express bus park/ride facility on it in an expeditious manner. If BART does follow through with the suggestion to restructure the routes of the express bus system to provide a more freeway oriented service, then a bus park/ride facility should be useful in this location.

If you have any questions concerning this matter, please feel free to give me a call.

Yours truly,



Robert J. Harris,
Director of Planning and
Community Development

RJH/sm



CITY OF PLEASANTON

STAFF REPORT

12F

June 6, 1984

HONORABLE CITY COUNCIL
Pleasanton, California

BART Draft Short Range Transit Plan

Members of the Council:

Background

BART has submitted a draft of their Short Range Transit Plan (SRTTP) for the five year period July 1984 to June 1989 to the City for comment. The plan presents the district's strategy for improving service through a program focusing on capacity expansion and adherence to performance standards. The plan addresses itself almost exclusively to the existing 71 mile basic system although there is some discussion of the status of the four BART fixed rail extensions in the three county BART area. These discussions pertain to the status of the extension studies and the program for purchasing priority 1 right-of-way sites in the extension areas. The proposed Dublin (Stoneridge) station site is in the priority 1 category.

Express Bus Service

The major issue raised in the SRTTP of interest to Pleasanton has to do with the future of BART Express Bus Service. A statement is made in the plan that the high cost, relatively low fare box recovery ratio and less than desired operating characteristics of the BART Express Bus Service have led to a major re-evaluation of this program. The BART Express Bus Program has experienced rapidly increasing expenses over the past three years. As a result, the BART staff sees a need to implement productivity improvements including the restructuring of routes for more freeway oriented service and the transfer of local bus services now provided by BART express buses to respective local transit operators. This would tie in well with Pleasanton and Dublin's plans for establishing our own local bus system. This bus service could act as a feeder system to supply the BART express buses if they are routed mainly to freeway corridors. BART officials have indicated that they would not cut back their level of bus service to both communities until our system is operating efficiently enough to pick up the slack.

SR 84:324

Freeway Park/Ride Facilities

The SRTP states that the thrust of BART's efforts within the next five years as far as the Express Bus System is concerned, will be to increase its effectiveness and operational efficiency through a program of route streamlining and restructuring. The phasing in of faster freeway orienting servicing in conjunction with freeway park/ride facilities is expected to result in substantially higher ridership as end to end bus travel times are reduced between 25% and 45%. The phasing in of new freeway service is to occur following completion of required park/ride facilities along segments or entire lengths of express bus routes. These facilities, for the most part, are to be located on future BART extension station sites.

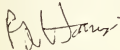
Dublin (Stoneridge) Station

The plan lists a park/ride facility in Livermore and one at I-680 and Alcosta Boulevard but none is mentioned for the Pleasanton area. The Dublin (Stoneridge) station site might prove to be an ideal location for such a facility. BART is in the process of negotiating with the Mozart Development Company for purchase of up to 11 acres of property at the southwest quadrant of the intersection of I-580 and I-680. It is the staff's opinion that if and when these negotiations are completed, BART should consider establishing a park/ride facility on the property until the BART fixed rail station is constructed on the site.

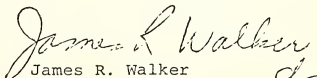
Staff Recommendation

The staff recommends that in response to BART's request for comments on the SRTP, that your Council direct the staff to prepare a letter to BART encouraging them to conclude their negotiations with Mozart as quickly as possible over the purchase of the Pleasanton portion of the Dublin station site and once that site is purchased to construct an express bus park/ride facility on the site in an expeditious manner.

Respectfully submitted,



Robert J. Harris
Director of Planning and
Community Development



James R. Walker
City Manager dg



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 465-4100

ARTHUR J. SHARTSIS
PRESIDENT

NELLO BIANCO
VICE-PRESIDENT

KEITH BERNARD
GENERAL MANAGER

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT

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ROBERT S. ALLEN
5TH DISTRICT

JOHN GLENN
6TH DISTRICT

WILFRED T. USSERY
7TH DISTRICT

EUGENE GARFINKLE
8TH DISTRICT

JOHN H. KIRKWOOD
9TH DISTRICT

July 3, 1984

Mr. Robert J. Harris
Director of Planning and
Community Development
City of Pleasanton
P. O. Box 520
Pleasanton, CA 94566-0802

Dear Mr. Harris:

This is in response to your letter of June 14, 1984 in which you transmitted comments on the BART Draft 1984 Short Range Transit Plan (SRTP).

We appreciate the interest of the City Council in our plans to improve express bus service and to develop an express bus park/ride facility in Pleasanton on the site of the proposed Dublin Station. Negotiations are underway in an attempt to acquire the site.

Sincerely,

Barbara A. Neustadter
Manager of Planning

cc: Director Robert S. Allen

City of San Leandro

Civic Center, 835 E. 14th Street
San Leandro, California 94577



Office of the Mayor 415-577-3356

June 15, 1984

Mr. Keith Bernard
Bay Area Rapid Transit District
800 Madison Street
P. O. Box 12688
Oakland, CA 94604

Dear Mr. Bernard:

Subject: BART 1984 Short-Range Transit Plan

The City of San Leandro appreciates the chance to review the Draft 1984 Short-Range Transit Plan which you recently sent us. We have two BART stations in our city and we are always interested in what BART is planning. We realize that increasing capacity and performance are top BART priorities and that they are complex and difficult problems. The steps proposed appear to be necessary and desirable ones for improving BART service.

Our concerns with the Draft Plan are not with what is proposed but more with the context in which the plan has apparently been prepared. As a member of the Metropolitan Transportation Commission (MTC), I am personally very aware of the regional transportation problems around the bay and of the role that transit must play in solving them. This regional importance of transit in general, and BART in particular, does not seem to be reflected in the Short-Range Plan. In recent months, several studies have made it clear that the transportation problems in the East Bay are going to become much worse in the short-run future unless steps are taken now to reduce them. San Leandro is working with other agencies, including the cities of Oakland, Alameda, and Hayward, the Port of Oakland, MTC, and Caltrans, to identify travel problems in our area and to help find solutions. It appears that no feasible improvements to the street and freeway system will be able to handle projected traffic. As you may have seen in recent news reports, Caltrans estimates that at least 14 lanes will be needed on the Nimitz in the general area of San Leandro and 10 is the maximum that it is feasible to build. We believe that BART, both directly and through MTC, should be involved in the problem solving process. If it is going to function as a "regional" system, we believe it must undertake its planning, both short-range and long-range, in a regional context.



A second concern here in San Leandro is that the Short-Range Plan does not appear to be linked to BART's cooperative planning effort with local jurisdictions for land use planning around BART stations and for more generalized land use planning in the BART service area. We believe that increases in off-peak travel and reverse commute travel are the best way to increase the usefulness of BART as a regional transportation system. It appears from your Short-Range Plan that all of the capacity and service improvements discussed in the plan will not do more than keep up with projected "normal growth" and meet a small amount of the demand beyond that.

There's an old saying, "when you're up to your waist in alligators, it's hard to remember that your original purpose was to drain the swamp." I hope that BART, in its efforts to deal with the immediate, short-range problems of capacity and performance, will not forget that it is part of the regional transportation system and that all of its planning, both short-range and long-range, should be kept in a regional context.

Very truly yours,


Valance Gill
Mayor

VG:dm

cc: Supervisor Joe Bort



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 465-4100

July 3, 1984

ARTHUR J. SHARTSIS
PRESIDENT
NELLO BIANCO
VICE-PRESIDENT
KEITH BERNARD
GENERAL MANAGER

The Honorable Valance Gill
Mayor
City of San Leandro
835 E. 14th Street
San Leandro, CA 94577

Val
Dear Mayor Gill:

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT
NELLO BIANCO
2ND DISTRICT
ARTHUR J. SHARTSIS
3RD DISTRICT
MARGARET K. PRYOR
4TH DISTRICT
ROBERT S. ALLEN
5TH DISTRICT
JOHN GLENN
6TH DISTRICT
WILFRED T. USSERY
7TH DISTRICT
EUGENE GARFINKLE
8TH DISTRICT
JOHN H. KIRKWOOD
9TH DISTRICT

I am writing in response to your comments dated June 15, 1984 on the BART Draft 1984 Short Range Transit Plan.

I agree with your concern about the importance of transit in solving regional transportation problems around the bay. While the leadership for planning of this type rests with the MTC, BART has endeavored to work closely and cooperatively with MTC towards this objective. The five year transit plan focuses on how we can make BART work well and be a system worthy of extension to other areas.

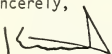
The capacity expansion program is a multi-year effort to increase BART's ability to serve peak period, peak direction travel in several of the most heavily used corridors in the region. Capacity must be keyed to peak requirements, but efforts must also be made to increase system utilization outside the peak periods. With respect to off-peak and reverse commute ridership, BART considers this to be its prime marketing focus in the short-run before peak capacity can be expanded. One of BART's Districtwide performance objectives for FY 1984/85 calls for increased marketing efforts to achieve a 3% gain in off-peak ridership.

I thoroughly agree with your concern that BART cooperate with local jurisdictions for land use planning around BART stations and for more generalized planning in the BART service area. In that regard, the BART Board of Directors has recently approved a Station Area Development Policy Statement which reflects local jurisdiction input. Likewise, BART has added a staff group within the Planning Department to deal exclusively with this area and all appropriate local agencies.

The Honorable Valance Gill
July 3, 1984
Page Two

BART recognizes its role as a key element in the regional transportation system, and intends to work with all relevant groups to improve the functioning and utilization of this system.

Sincerely,



Keith Bernard
General Manager

cc: Director Robert Allen

P.S. - Although the Five Year plan does not spell out BART's station area development program in detail, other BART documents will. It is our desire to work out, ultimately, a joint station area development plan with each jurisdiction for each station.

Also, when standing back and taking a long look, it's clear to me that BART isn't going to be able to handle all the "alligators," and that more transit operating and capital money is going to have to be found for this region. I appreciated your thoughts,
Sincerely,



CITY OF OAKLAND



CITY HALL • 14TH AND WASHINGTON STREETS • OAKLAND, CALIFORNIA 94612

Office of Public Works

June 15, 1984

Mr. Keith Bernard
Bay Area Rapid Transit - District
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688

Re: Draft - 1984 Short Range Transit Plan

Dear Mr. Bernard:

Thank you for the opportunity to review the draft of the 1984 Short Range Transit Plan. Our main concern is with the priority of planned extensions (Fig. II - 3). We note that the San Francisco Airport extension is a Priority I project while extensions to Pittsburg/Antioch and to Pleasanton/Livermore are listed as Priority II projects. This is in conflict with City of Oakland's adopted policy.

The Oakland City Council has adopted as its official policy that extensions of the BART system into Alameda and Contra Costa Counties be given priority over extensions of BART into other counties. A copy of the resolution adopting this policy is attached for your information. The City Council has specifically opposed the construction of a BART extension to San Francisco Airport. Therefore, we request that the Short Range Transit Plan be revised to reflect these priorities.

Once again thank you for the opportunity to comment on the Short Range Plan.

Very truly yours,

TERRY E. ROBERTS
Director of Public Works

IJ/jh

Attachments

cc: City Manager
City Planning

OAKLAND CITY COUNCIL

RESOLUTION NO. 61967 C. M. S.

INTRODUCED BY COUNCILMEMBER _____

TRL:

RESOLUTION SUPPORTING THE EXTENSION OF THE BAY AREA RAPID TRANSIT SYSTEM INTO ALAMEDA AND CONTRA COSTA COUNTIES

WHEREAS, Proposals are being considered to expand the Bay Area Rapid Transit System ("BART") throughout the Bay Area, including expansion in Alameda, Contra Costa and San Francisco Counties, as well as into San Mateo County; and

WHEREAS, San Mateo County voted in 1962 to be excluded from the BART system and has not paid taxes in support of BART for the past 22 years; and

WHEREAS, BART is committed by statute to complete its transit system within Alameda, Contra Costa and San Francisco Counties before it expands into other counties; and

WHEREAS, by Resolution No. 61949 C.M.S., approved on February 21, 1984, the Oakland City Council opposed the construction of a BART connection between San Francisco and San Francisco International Airport, which is located in San Mateo County; now, therefore, be it

RESOLVED: That the Oakland City Council hereby expresses its support for the extension of the BART system into Alameda and Contra Costa Counties, whose residents and business have already paid, and continue to pay, their fair share of the expenses of the BART system, prior to the extension of the BART system into other counties who have not shared fairly in the burden of financing the BART system; and, be it

FURTHER RESOLVED: That notice of this official policy of the City of Oakland be forwarded to Oakland representatives on the BART Board of Directors, and that they be urged to be

responsive to this policy in their deliberations and decisions; and that this action also be made known to all the members of the Metropolitan Transportation Commission and, in particular, to the Alameda County representatives serving on the Commission.

I certify that the foregoing is a full, true and correct copy of a Resolution passed by the City Council of the City of Oakland, California, on February 28, 1961

ARRECE JAMESON
City Clerk

Per

James Smith

Deputy



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 465-4100

June 25, 1984

ARTHUR J. SHARTSIS
PRESIDENT
NELLO BIANCO
VICE-PRESIDENT
KEITH BERNARD
GENERAL MANAGER

Mr. Terry F. Roberts
Director of Public Works
City of Oakland
14th and Washington Streets
Oakland, CA 94612

Dear Mr. Roberts:

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT
NELLO BIANCO
2ND DISTRICT
ARTHUR J. SHARTSIS
3RD DISTRICT
MARGARET K. PRYOR
4TH DISTRICT
ROBERT S. ALLEN
5TH DISTRICT
JOHN GLENN
6TH DISTRICT
WILFRED T. USSERY
7TH DISTRICT
EUGENE GARFINKLE
8TH DISTRICT
JOHN H. KIRKWOOD
9TH DISTRICT

I am writing in response to your letter of June 15, 1984 in which you commented on the BART Draft 1984 Short Range Transit Plan (S RTP).

You indicate that the priority of planned BART extensions is in conflict with the City of Oakland's adopted policy which favors extensions within Alameda and Contra Costa County over extensions into other counties.

The BART Board policy reflects the views of Directors from all three of the BART counties, and was reached after careful consideration of the issues and views of a number of communities within the District.

Sincerely,

Keith Bernard
General Manager

cc: Director Margaret Pryor

CITY OF OAKLAND



CITY HALL • ONE CITY HALL PLAZA • OAKLAND, CALIFORNIA 94612

Planning Department

TTY 839-6451

June 21, 1984

Mr. Keith Bernard
General Manager
Bay Area Rapid Transit District
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688

Dear Mr. Bernard:

We have reviewed BART's Draft 1984 Short Range Transit Plan (SRTPT). We endorse the comments submitted to you by Oakland Public Works Director Terry Roberts regarding BART extensions, and have a number of additional comments to offer.

Concord-Oakland Service: Our major concern is access to downtown Oakland for commuters on the Concord line. Presently, those arriving on the Fremont and Richmond lines can use trains that do not go on to San Francisco, and those coming from Daly City are travelling the reverse commute direction from San Francisco. However, those coming from central and eastern Contra Costa County have only one line serving them with all trains going on to San Francisco. This causes crowding and unnecessary inconvenience for both Oakland and San Francisco commuters. With the Concord line already running near capacity, the anticipated residential growth rate of Contra Costa County, and the anticipated growth in employment in downtown Oakland and San Francisco, this problem will only get worse in the future if something is not done.

As a possible solution, we would suggest adding a route from Concord that does not go to San Francisco but that terminates in downtown Oakland. Some peak-period Concord-Daly City trains could then be "San Francisco Express", not stopping at 12th or 19th Street stations. This would effectively separate Oakland and San Francisco peak-period commuters onto two different lines, greatly increasing the capacity for both. The Concord-Oakland or Concord-Fremont trains could be added in the 7.5 minute interval between Concord-Daly City trains after the KE track and fire-hardening projects are completed in 1985.

This Concord-Oakland commute problem and possible solutions, such as the one mentioned above, should be discussed in the SRTPT.

Concord-Berkeley Service: The daily traffic congestion on Tunnel Road and the low peak-hour usage of BART's Richmond line suggest that most of the 10,000 commuters who live east of the Oakland Hills and work in Berkeley and points north are driving cars. This is understandable, since BART is the only transit service available, and it requires an indirect trip with a transfer at MacArthur Station.

Direct Concord-Berkeley service would make transit more attractive and help to relieve one of the most serious traffic congestion problems in Oakland and Berkeley. Unfortunately, the Concord and Richmond lines were not designed for direct service; such a route

Mr. Keith Bernard

June 21, 1984

Page -2-

would require constructing a North Oakland wye with a new track running between Rockridge and Ashby stations. This obviously is not feasible in the short-run, but it should be considered in BART's long-range planning.

Meanwhile, a new BART express bus route could provide the needed service, running via Highway 24 and stopping at all BART stations between Concord and Orinda. West of the tunnel, it could run direct to the University and downtown Berkeley (not via Tunnel Road). Such service would be most effective if coordinated with Caltrans to establish HOV lanes on Highway 24.

The Concord-Berkeley problem and its possible short- and long-range solutions should be discussed in the SRTP.

KE Track: The SRTP mentions the new KE track in downtown Oakland several times, but never clarifies its purposes and operation. From footnote "b" on Table I-4, it appears to be no more than a very expensive storage track. In addition to the Concord-Oakland service suggested above, it seems that the KE track could allow Richmond-Fremont and Concord-Daly City trains to operate independently because they could run on separate tracks through downtown Oakland. The SRTP should more clearly explain the function of the KE track.

Commute Alternatives and Station Access: The SRTP seems to reveal a curious bias in favor of the use of single-occupant automobiles. For example, the plan notes that demand for BART service is high despite parking problems at stations, but says that more parking should be provided anyway. The plan also says that BART is the only regional transportation facility capable of handling increased use because there are no plans to expand the regional highway system. Both of these statements assume continued predominance of single-occupant automobiles and overlook the tremendous increases in capacity which can be realized if existing highway and parking facilities are used more efficiently.

The Metropolitan Transportation Commission has for several years been actively promoting the use of "commute alternatives" including public transit, ridesharing, shuttle service, bicycling, and walking. BART's policy of providing free parking at stations and its present plans to expand that parking do not encourage the use of commute alternatives for access to BART stations. Rather, they simply relocate parking problems from the center cities to the suburbs.

Instead of expanding parking, BART should actively discourage the use of single-occupant vehicles for access to stations, and should embark on an aggressive program to promote access by bus, car- and van-pool, bicycle, and walking. Such a policy would be consistent with several identified in the SRTP, such as coordinated AC Transit/BART schedules, the new AC/BART/Muni "super pass", improved express bus efficiency, and shuttles from remote park-and-ride lots. We support those programs and encourage their expansion.

Coordination with City of Oakland: The SRTP mentions several plans and activities within the City of Oakland. These include increased parking at Fruitvale station; the new KE track; improved AC Transit/BART interface; development proposals at Lake Merritt, Coliseum, and Oakland West station; special events at the Coliseum and in downtown Oakland; and the proposed Alameda-Coliseum station shuttle. In order to ensure consistency between BART proposals and the plans and policies of the City of Oakland, all such proposals (including any plans for the MacArthur station area) should be referred to us for review and comment during plan development.

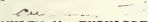
Mr. Keith Bernard
June 21, 1984
Page -3-

Other Reports: The SRTP mentioned several other reports which we would like to have. These include the Systems Performance Study, the DEIS's on the North Concord and Warm Springs extensions, the Access Implementation Program, the MTC Transfer Needs Assessment, and the Station Area Development Program Implementation Guidelines and Procedures. Of course, we would also like a copy of the final SRTP when it is available.

Thank you for the opportunity to review BART's Short Range Transit Plan. We hope our comments are helpful in improving and expanding BART service to Oakland and the region.

Sincerely,

NORMAN J. LIND
Director of City Planning

by 
FRANKLIN M. EHRHARDT
Senior Planner

NJL:FME:CSB:crr

TR 14.99



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 465-4100

July 3, 1984

ARTHUR J. SHARTSIS
PRESIDENT
NELLO BIANCO
VICE-PRESIDENT
KEITH BERNARD
GENERAL MANAGER

Mr. Norman J. Lind
Director of City Planning
City of Oakland
One City Hall Plaza
Oakland, CA 94612

Dear Mr. Lind:

This is in response to your letter of June 21, 1984 in which you provided comments on the following issues related to the BART 1984 Draft Short Range Transit Plan (SRTP):

DIRECTORS
BARCLAY SIMPSON
1ST DISTRICT
NELLO BIANCO
2ND DISTRICT
ARTHUR J. SHARTSIS
3RD DISTRICT
MARGARET K. PRYOR
4TH DISTRICT
ROBERT S. ALLEN
5TH DISTRICT
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8TH DISTRICT
JOHN H. KIRKWOOD
9TH DISTRICT

- Concord-Oakland service,
- Concord-Berkeley service,
- KE track,
- Commute alternatives and station access,
- Coordination with City of Oakland, and
- Other reports.

Concord-Oakland Service

While it is true, as you point out, that only one route serves the Concord line, more trains and cars operate on this route than on any of the other three. This service is oriented toward San Francisco because over seven times as many persons commute there from the Concord line as to downtown Oakland and the Fremont line.

BART will be very limited during the next three years in its ability to add peak period service until the Capacity Expansion Program yields results. Improvements during the coming year in the form of two extra trains are scheduled for the Fremont-Daly City and Concord-Daly City routes where load factors are currently the highest.

In the future, as it becomes possible to add more peak period trains, consideration will be given to alternative service configurations such as a Concord-Fremont route.

Concord-Berkeley Service

As you point out, Tunnel Road traffic congestion is growing, and BART service between the Concord and Richmond lines is not direct.

Mr. Norman J. Lind
July 3, 1984
Page Two

An excellent alternative currently available to Concord line commuters working in Berkeley is to transfer to the AC Transit 51 line at Rockridge Station. The 51 line operates at high frequency and serves College Avenue, the U.C. Campus area and downtown Berkeley.

In the longer run, supplemental service may be necessary. This issue will be addressed in future updates of the SRTP.

KE Track

The KE track will augment BART operational flexibility in a number of ways including separation of the three routes which now share the same trackage between MacArthur and Oakland City Center 12th Street Stations. Although it is our intention to use the southern end of the KE track as a storage option until the entire project is finished, this is definitely not its sole long-run purpose.

Commute Alternatives and Station Access

Less reliance on single-occupant automobile commuting and more use of alternative modes is eminently desirable. Unfortunately, suburban development patterns were heavily influenced by the automobile, and this puts alternative modes at a competitive disadvantage in outlying areas. BART has made significant efforts through its BARTPOOL program to increase this form of access to the system. It appears that the practical limits to this effort have been reached. It is for this reason that BART plans to expand parking capacity at suburban stations.

Efforts are also well underway to improve feeder and express bus access to the system. Staff is working with AC Transit to improve routes, service frequency and transfer coordination.

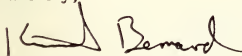
Coordination with City of Oakland

It continues to be District policy to refer all plans and proposals affecting the City of Oakland to your department for review and comment during plan development. We value local input and actively seek it.

Other Reports

The reports you requested will be transmitted when available.

Sincerely,



Keith Bernard
General Manager

cc: Director Margaret Pryor



June 21, 1984

Keith Bernard, General Manager
Bay Area Rapid Transit District
800 Madison Street
Oakland, California 94604-2688

SUBJECT: DRAFT 1984 SHORT RANGE TRANSIT PLAN

Dear Mr. Bernard:

The City of Walnut Creek appreciates the opportunity to review and comment on the Draft 1984 Short Range Transit Plan. Of particular interest is how the plan addresses issues that have surfaced during the Walnut Creek Core Area Plan revision study and the Walnut Creek/BART joint planning study.

Although these studies are not complete at this time, the following issues are of interest to the City and would, in the City's opinion, be of mutual benefit to Central Contra Costa County residents and BART users:

- Increase BART parking at the Walnut Creek station;
- Provisions for extending express bus service primarily in the Ygnacio Valley Road corridor;
- Establishing a park/ride service in conjunction with CCCTA on Ygnacio Valley Road.

We suggest that the Short Range Transit Plan identify such program objectives during the period FY 1985-86 to FY 1988-89 period in the Access section, or in connection with joint development at the Walnut Creek station site.

If we can provide any additional information or if you have any questions concerning our comments, please contact me.

Very truly yours,


HARLEY GOLDSTROM
Associate Planner

HG/mr
cc: Community Development Director
CCCTA, Joyce Olson

LTRKB.HG



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 465-4100

July 3, 1984

ARTHUR J. SHARTSIS
PRESIDENT

NELLO BIANCO
VICE-PRESIDENT

KEITH BERNARD
GENERAL MANAGER

Mr. Harley Goldstrom
Associate Planner
City of Walnut Creek
1666 North Main Street
Walnut Creek, CA 94596

Dear Mr. Goldstrom:

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT

NELLO BIANCO
2ND DISTRICT

ARTHUR J. SHARTSIS
3RD DISTRICT

MARGARET K. PRYOR
4TH DISTRICT

ROBERT S. ALLEN
5TH DISTRICT

JOHN GLENN
6TH DISTRICT

WILFRED T. USSERY
7TH DISTRICT

EUGENE GARFINKLE
8TH DISTRICT

JOHN H. KIRKWOOD
9TH DISTRICT

Thank you for your letter of June 21 outlining your city's comments on the BART Short Range Transit Plan. BART staff has reviewed your comments and has the following response.

BART Parking at Walnut Creek Station: Page II-26 of the SRTP draft states that design work will be initiated in FY 1984/85 on a 1200 space parking facility at Walnut Creek Station. Though not listed specifically in the Access Objectives, this project would be one of the access improvements to be pursued in the FY 85/86 - FY 88/89 period.

Extending Express Bus Service in the Ygnacio Valley Corridor: Express Bus service in this corridor is not part of BART's adopted Express Bus Plan. BART views such service as local service, to be provided by the local transit agency, CCTA in this case.

Park & Ride Service on Ygnacio Valley Road: As mentioned above, BART feels that provision of local transit service is the responsibility of the local transit agency. However, BART would encourage efforts to provide such service.

If you have any questions concerning the above, please contact Barbara Neustadter at 464-6160.

Sincerely,

Keith Bernard
General Manager

cc: Director Barclay Simpson
Joyce Olson, CCTA

****FARES****

Regular Adult: Rail fares are largely based on a distance formula ranging from 60¢ to \$2.15. The average weekday rail fare is currently \$1.28. Regular express bus fares are 60¢ and 90¢ for one and two zone rides, respectively; rail patrons transferring to an express bus may obtain a free transfer worth 60¢.

Discounts: A 4.8% rail fare discount is provided through the sale of \$21 tickets for \$20. Rail fares for handicapped persons, students 5-12 years of age, and persons 65 years of age and older are 10% of the regular adult fares. Children under 5 can ride free. Discount bus fares are 10¢ for one zone and 20¢ for two zones for the groups listed above. A \$24 BART/MUNI monthly pass is also available, allowing for unlimited BART and San Francisco MUNI travel within San Francisco.

Transfers: Free transfers can be made between all BART trains. Special agreements between BART and most other Bay Area operators permit up to a 50% discount for connecting transit service (on a round-trip basis).

****PATRONAGE****

Average Weekday: BART patronage averaged 202,536 trips per weekday during FY 1983/84. Of these trips, 105,064 (51.9%) occurred within the 4-hour peak travel period (2 morning hours plus 2 afternoon hours). Transbay trips constitute 50.9% of weekday travel with 24.0% Eastbay and 25.1% Westbay.

Weekends: Saturday ridership averaged 79,873 trips during FY 1983/84 with 45.9% Transbay, 31.3% Eastbay, and 22.8% Westbay. Ridership for Sunday averaged 45,497 with market shares of 46.1% Transbay, 34.2% Eastbay, and 19.7% Westbay.

Annual Ridership: Total ridership during FY 1983/84 was 58,277,463 rail trips versus a forecast of 55,378,100 for the same period (5.2% above forecast and 8.5% above total ridership for FY 1982/83).

****CAPACITY****

On-Line Requirements: BART currently operates a maximum of 43 on-line trains which require 86 A-cars and 235 B-cars. In addition to these, 8 trains are held as ready spares requiring 16 A-cars and 24 B-cars.

Maximum Service Delivery: As of June 1984, scheduled peak hour capacity for the three Transbay routes serving downtown San Francisco and Oakland stations is 16 trains consisting of 151 cars (or 10,872 seats). For the Eastbay route, which also serves downtown Oakland stations, maximum peak hour capacity is 5 trains consisting of 26 cars (or 1,872 seats).

****KEY PERFORMANCE INDICATORS****

On-Time Performance: Daily on-time performance has consistently been above 90% since October 1980 and averaged 95.0% during FY 1983/84.

Scheduled Train Dispatches Completed: Performance has consistently been above 98% since January 1981 and averaged 99.1% during FY 1983/84.

Load Factors: Peak hour load factors averaged 1.39 for Transbay service during FY 1983/84 and 1.19 for the Eastbay route. Load factors for the shoulder period (approximately 45 minutes before and after the peak hour) averaged 1.26 Transbay and 1.04 for the Eastbay route.

Peak Period Transbay Throughput: The percentage of scheduled Transbay capacity actually provided during FY 1983/84 is 98.6% for trains and 97.0% for cars.

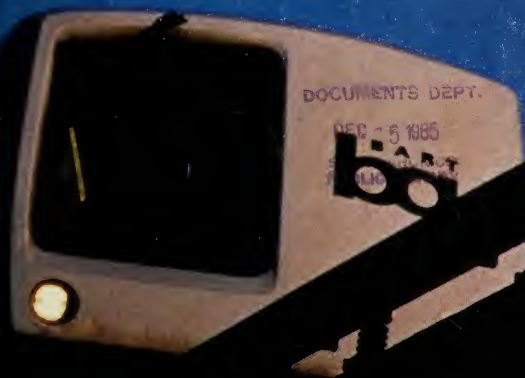
****OTHER PERFORMANCE INFORMATION FOR FY 1983/84****

PERFORMANCE DATA (in thousands)	
Passenger-miles	761,800.1
Car-miles	29,852.1
Car-hours	1,090.7
Rail operating cost	\$126,589.7
Express bus cost	\$7,456.8
Total operating cost	\$134,046.5
Net passenger revenue	\$65,492.3
Other revenue	\$7,066.4
Total revenue	\$72,558.7
Operating deficit	\$61,487.8
Total Passengers	58,277.5

PERFORMANCE INDICATORS	
Farebox ratio	48.85%
Operating ratio	54.12%
Operating cost/passenger	\$2.17
Rail operating cost/passenger-mile	16.62¢
Rail operating cost/car-mile	\$4.24
Rail operating cost/car-hour	\$116.06
Passengers/car-mile	1.95
Passenger-miles/seat-mile	0.35
Passenger-miles/car-hour	698.45
Operating revenue/passenger	\$1.25
Operating deficit/passenger	\$1.06

REG
516
#58
985-90

BAY AREA RAPID TRANSIT DISTRICT



1985 FIVE YEAR PLAN

October 1985

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT
BOARD OF DIRECTORS

Wilfred T. Ussery	President
John Glenn	Vice President
Robert S. Allen	
Nello Bianco	
Eugene Garfinkle	
John H. Kirkwood	
Margaret K. Pryor	
Arthur J. Shartsis	
Barclay Simpson	

Keith Bernard
General Manager

Prepared By: Research Section
Department of Planning & Analysis
Bay Area Rapid Transit District
800 Madison Street
Oakland, California 94607

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S U M M A R Y

October 1, 1985

To BART Patrons and District Residents:

This past year has been an especially good one for BART. Operating and financial performance measures have topped previous records, implementation of planned improvements proceeded apace, and use of the system reached its then highest level to date during the 1984 Democratic National Convention. Since then, even higher records have been set.

Delegates to the Convention were pleasantly surprised when they came to town -- surprised to learn that "getting around" doesn't have to mean "driving around." The local media reported the visiting delegates' praise for both the quality and coverage of public transportation in the Bay Area. Few urban areas in the United States equal the level of transit service which is provided locally.

We've got a good thing going, a transportation system which has evolved through a strong local commitment to developing alternative means of "getting around." This transportation system is integral to the quality of life we in the Bay Area enjoy. And, because this is our home, we need to be especially mindful of how we manage change so that the demands for housing, jobs, and vital services, including transportation, are met. This is a challenge to us all, for the services operating today are the result of a collective effort--of individuals, private businesses, and government working together for the benefit of everyone. BART was born out of this process and, after some hard early years, the 71-mile rail system now operates reliably and efficiently. Whether travel is for the purpose of going to work, personal business, or simply for fun, BART fulfills an important need by providing "car-free" access to important activity centers throughout the three BART counties.

Change will always be part of our future. Because of this, we can't sit back and assume that yesterday's investments will totally meet tomorrow's needs. We must plan for the kind of future we desire--preserving the best of what we have and building upon that foundation. That's the purpose of BART's Short-Range Transit Plan (SRTP), an annually updated document which contains the strategy for improving BART to meet future needs. The 1985 SRTP identifies goals and

service objectives, the projects needed to achieve them, and the financial requirements for realizing a comprehensive improvement program.

Every new home, office building, retail store, medical facility, theater, and almost any kind of new development, means more people going to more places. Over-crowded highways, limited parking, increasing fuel costs, and travel constrained by the Bay Area's topography mean that BART will be expected to absorb a significant portion of this new travel demand. However, like our freeways, bridges, and tunnels, BART also has its capacity limitations. Currently, only 43 trains can be operated on the system simultaneously at a service frequency no higher than 16 trains an hour (or a train every 3 minutes, 45 seconds).

Without necessary improvements, service levels much beyond the current schedule cannot be provided. Even if higher frequency service was possible, all available BART cars are already in service, leaving none to form additional trains. And, those 43 trains circulating throughout the system are crowded now, with an average of one-third more passengers on-board than there are available seats. Despite this condition, ridership continues to grow, which is precisely why BART is implementing its Capacity Expansion Program, the centerpiece of BART's 1985 SRTP. (A summary of this program is shown in Figure 4, page S-10.) I am pleased to report progress for this program which will result in realizing a greater share of BART's potential for serving Bay Area travel needs:

- o 150 new cars are currently being manufactured, all of which will contain more reliable automatic train control units (these new units will also be installed on BART's existing slant-nosed A-cars). One prototype car is now undergoing extensive testing at the Budd Company in Philadelphia prior to its shipment to BART this summer.
- o A replacement for the central train control system is currently being developed to allow for greater than 49-train service, as limited by the existing computer system.
- o An additional subway track through downtown Oakland will be completed by the end of 1985 and will greatly enhance operational flexibility and reliability as train frequencies are increased.

- o The current BART fleet is being "fire-hardened" with new floor, ceiling, and wall liners on each vehicle to reduce flammability and toxic smoke emissions.
- o Construction for the Daly City Turnback and Yard began in February 1985. The Turnback is a key capacity project needed to reduce the time for reversing trains at Daly City (which limits service frequencies systemwide). The Yard will enhance both operating flexibility and economy, in addition to still lower headways.
- o In addition to the above, the recently completed System Performance Study calls for a number of improvements to be done under BART's Enhanced Transit System Installations (BETSI).

Once these major projects are in place, the system will be capable of operating more trains at higher frequencies than is currently possible. The first service improvement, targeted for Fall 1986, calls for the addition of two commute period trains: one Fremont-Daly City train in the peak hour and one Concord-Daly City train just outside the peak hour. This will raise scheduled capacity to 17 trains during the peak hour. The cars for these two trains are to become available by July 1986 upon completion of the fire-hardening program.

As new C-cars are delivered and become available for service, the period of high frequency, 17 train-per-hour service will be lengthened by adding more trains on the system. It is currently expected that by January 1987 the number of trains on the system will be increased from 45 to 48. The completion of important capacity expansion projects will allow BART to increase its maximum service frequency to 19 trains per hour. The current schedule calls for operation of 54 trains beginning in February 1988. The final service increment in the current 5-year planning timeframe is an increase in on-line trains to 57, with a maximum service frequency of 24 trains per hour.

Sometime after June 1990 (beyond the current 5-year SRTP timeframe), plans are to increase service further to 26 trains an hour.

While the focus of BART's 1985 SRTP is on how capacity will be expanded as described above, the document also addresses other very important concerns. These include safety, reliability, parking, extensions, improved productivity, and costs. The 5-year financial plan identifies sources of funding for the entire SRTP program--for operations, for projects in BART's well-established Capacity Expansion Program, and all other capital projects needed to provide safe, reliable, and efficient service.

In view of the previously anticipated substantial operating deficits, a 30% fare increase was approved September 26, 1985 for implementation in January 1986. This increase, with the addition of expected financial assistance, is expected to balance the operating budget for three years. On October 3, 1985 the Board of Directors authorized the issuance of additional Sales Tax Revenue Bonds for essential system access and other capital improvements. Because BART has much less control over capital funding, the federal government's declining financial support for mass transit improvements could very well place BART's Capacity Expansion Program, and many other capital projects dependent upon federal funds, in jeopardy. The 1985 SRTP capital requirement calls for federal funding participation of just over 40%. This is well below the 75% participation rate many other public agencies receive. Clearly, any delays or shortfalls will have a direct impact on the delivery of BART's capital program and the system's ability to accommodate substantially more travel than today.

The 1985 SRTP is an action plan--one that will enable BART to keep pace with an ever-changing Bay Area. Where our efforts will be directed is best represented by BART's goals and objectives which are annually updated and adopted by the District Board of Directors as part of developing this strategic plan. This policy is summarized in Figures 1, 2, and 3 starting on page S-5. And, finally, financial requirements needed to realize the SRTP's five-year program are summarized in Figures 5, 6, and 7 beginning on page S-11.

So, while visitors to the Bay Area, like the 1984 Convention delegates, may be surprised by the ease of getting around by BART, we who live here expect high quality transit service. With your support, 2,300 BART employees and I look forward to meeting this challenge.

Keith Bernard, General Manager
Bay Area Rapid Transit District

Figure 1

BART GOALS FOR FY 1985/86

1. Operate scheduled 4-route weekday service with route headways of 15 minutes or less during peak and midday periods and expand service within feasible, technical, and financial limits including improved peak-hour frequency of service and capacity where needed.
2. Improve the reliability performance of the present BART system.
3. Continue to improve BART system and patron safety and emergency preparedness.
4. Increase system utilization by promoting BART travel for all purposes with special emphasis on offpeak and reverse commute trips.
5. Fund and implement the necessary capital improvements and replacements to the system.
6. Operate within available funds without incurring an unfunded deficit.
7. Maximize the contribution to operating costs from passenger revenues, consistent with reasonable fare levels, to achieve a farebox ratio above 50%.
8. Make every effort to achieve District objectives for female and minority employment and minority business enterprise participation.
9. Improve system access by means of a comprehensive program of parking expansion, BART feeder services, transit coordination, and special projects addressing elderly and handicapped mobility.
10. Develop station area sites for the realization of increased patronage and revenues, and to enhance the communities BART serves.
11. Extend BART trunk lines within Bay Area travel corridors where feasible and in support of regional land use policies.

PROGRAM AREA A: BASIC SYSTEM SERVICE & CAPACITY

1. Balance capacity where possible such that load factors for peak period trains which can be lengthened or shortened (consists between 3 and 10 cars) are relatively equal and provide offpeak service such that no train load factor exceeds 1.05.
2. Operate weekday peak period Transbay service in the peak direction providing at least 98.0% of scheduled train throughput and 97.5% of scheduled car throughput on a monthly average basis.
3. Make available 102 A-cars and 261 B-cars for revenue service by 4 AM (weekdays).

PROGRAM AREA B: RELIABILITY

1. Complete 99% of all monthly scheduled dispatches.
2. Conduct operations such that on a monthly basis 95% of daily terminal-to-terminal runs are completed within 5 minutes of scheduled run times with at least 93% during AM and PM peak periods for commute days.
3. Provide service such that no more than 2% of peak period trains experience a primary delay exceeding 7 minutes and no more than 6% experience a delay from any cause exceeding 7 minutes.
4. Conduct operations such that on a quarterly basis, 94% of all patron trips are completed on-time. All patron trips are on-time when trains run not more than 5 minutes late or 60 seconds early.
5. Provide service such that passenger offload rates remain at or below the following: vehicle equipment = 1.10; wayside equipment = 0.05; operations and other = 0.20; and the total = 1.35.
6. Maintain the overall AFC technician maintenance incident rate at or below 0.30 incidents per 1,000 passenger trips, and maintain or exceed a 6 AM average weekday availability rate of 95% for entry/exit gates and 90% for ticket vendors.
7. Maintain a 6 AM average weekday availability of 95% for elevators and 93% for escalators.
8. Maintain express bus ontime performance such that 95% of all runs arrive at their final destination within 5 minutes of schedule.

PROGRAM AREA C: SAFETY AND SECURITY

1. Provide sufficient police coverage such that the rate of patron-related crimes does not exceed 9.5 per million passengers for disorderly conduct and 9.0 per million for all others.
2. Continue to provide an environment for patron circulation through trains and stations such that the accident rate does not exceed 17.7 per million passengers.
3. Reduce the total annual amount of employee lost time due to injuries as a percent of time worked to 0.50% or less.
4. Conduct a minimum of one emergency plan exercise per month involving emergency response agencies.

Figure 2: BART PERFORMANCE OBJECTIVES FOR FY 1985/86 (Continued)

PROGRAM AREA D: PATRONAGE & TRAVEL PROMOTION

1. At a minimum, achieve normal growth projections for average daily patronage as follows (in 1,000's) at current fares:

	<u>Jul-Sep</u>	<u>Oct-Dec</u>	<u>Jan-Mar</u>	<u>Apr-Jun</u>	<u>FY 1985/86</u>
Average Weekday:	220.6	221.8	209.3	213.3	216.2
4-hour Peak:	111.7	113.7	111.5	111.5	112.1
Offpeak:	108.9	108.1	97.8	101.8	104.1
Saturday:	86.3	84.1	81.6	84.9	84.2
Sunday:	51.3	48.0	46.9	48.2	48.4

2. In addition to the above, actively promote offpeak ridership to achieve a 3% increase in travel as follows (1,000's).

	<u>Jul-Sep</u>	<u>Oct-Dec</u>	<u>Jan-Mar</u>	<u>Apr-Jun</u>	<u>FY 1985/86</u>
Weekday:	3.3	3.2	2.9	3.1	3.1
Saturday:	2.6	2.5	2.4	2.5	2.5
Sunday:	1.5	1.4	1.4	1.4	1.5

3. Continue sampling procedure to evaluate train and station area cleanliness, and maintain train and station cleanliness at or above an evaluation rating of 90%.
4. Continue concern for customer relations among public contact personnel such that the rate of patron complaints about this issue remains below 8.75 per million trips.
5. Continue public announcement procedures and practices such that the rating for four categories of announcements in the Passenger Services Sampling Survey averages at least 95%.

PROGRAM AREA E: FINANCIAL & OPERATIONAL EFFICIENCY

1. Maintain a funded budget and farebox ratio of no less than 48.0% including 17.1% for BART express bus operations and 51.4% for rail operations.
2. Maintain a rail cost per passenger mile of 18.8¢ or less.
3. Achieve a level of service output such that 15,054 vehicle miles are produced per equivalent District employee (based on 2,000 hours worked, including overtime and excluding capitalized labor).
4. Improve system utilization (passenger miles per seat mile) to 36.5% through continued monitoring of train capacity to match passenger demand patterns.
5. Maintain a paid sick leave rate of no more than 3.5% (9.1 paid days) annually per employee.
6. Transmit key performance reports to the Board of Directors, Department Managers, and/or other recipients within the following number of working days after the close of each reporting period: Monthly Patronage Report (10), Monthly Budget Performance Report and Quarterly Affirmative Action Report (15), Quarterly Financial Statements (25), Quarterly Performance Report on System Objectives (35), Quarterly Operations Performance Report (45), and the Annual Report (75).

PROGRAM AREA F: AFFIRMATIVE ACTION

1. Achieve workforce representation objectives for women and minorities in accordance with the 1983 Affirmative Action Plan.
2. Encourage efforts to achieve 21% minority business enterprise participation for all District contracts determined to have MBE opportunities, with 18% DBE and 3% WBE participation for federally assisted contracts.

PROGRAM AREA G: SYSTEM ACCESS

1. Provide 2,826 additional BART-owned parking spaces at existing rail stations and potential future station sites.
2. Continue to implement schedule coordination between BART and AC Transit.
3. Construct three Park/Ride facilities during summer and fall of 1985 to be operational in early 1986: North Concord/Martinez, Bailey Road, Hillcrest Avenue.
4. Implement first stage streamlining in all express bus corridors.
5. Implement flash pass.
6. Review the effectiveness of the initial implementation of the platform edge and elevator improvement projects and proceed with further implementation as warranted.

PROGRAM AREA H: JOINT DEVELOPMENT

1. Achieve development planning milestones at Richmond, Fremont, Concord and Daly City:
 - Richmond - Complete market analysis and urban design components of specific plan.
 - Fremont - Secure city approval of general plan amendment allowing intensive commercial or mixed use development on BART property.
 - Concord - Achieve inclusion of BART's development plans in the urban design guidelines being prepared by City staff for Council approval.
 - Daly City - Complete joint planning work on the Specific Plan so that it is ready to be submitted for formal approvals by the Council.
2. Assuming adequate developer response to the Pleasant Hill Hotel RFP, negotiate an acceptable ground lease and development agreement by February 1, 1986.
3. Implement direct marketing effort aimed at large corporate anchor tenants for such marketable sites by September 1, 1985.
4. Initiate transit center plans, assuming necessary land acquisitions at West Pittsburg, Dublin and Warm Springs by June 30, 1986.

PROGRAM AREA I: EXTENSION SERVICE & CAPACITY

1. Pursue acquisition of all Priority I sites as identified in the Extension Right-of-Way and Facilities Expenditures program within available funding.
2. Identify grant sources for right-of-way funding and prepare appropriate applications.
3. Work with local communities, developers and property owners to encourage local community acquisition, dedication, preservation and joint development of potential extensions properties.
4. Initiate the Alternatives Analysis/Draft Environmental Impact Requirements for Phase I of the Extension Staging policy.

Figure 3: BART PERFORMANCE OBJECTIVES FOR FY 1986/87 THROUGH FY 1989/90

PROGRAM AREA A: BASIC SYSTEM SERVICE & CAPACITY

- o Increase peak period capacity from 43 trains to 45 trains by adding one train each to the two most heavily travelled routes (Fremont/Daly City and Concord/ Daly City) by September 1986.
- o Operate 4-route weekday service with the capability of providing sustained 3 minute 10 second-headways by February 1988 following the completion of the Daly City Turnback reducing to 2 minutes 30 seconds by July 1989 following the completion of remaining capacity expansion projects.
- o Support the following weekday car requirements (as of the fourth quarter of each fiscal year):

<u>Service Requirements</u>	1987	1988	1989	1990
A-Cars	112	115	115	115
B-Cars	272	272	272	272
C-Cars	41	107	128	128
TOTAL	425	494	515	515

<u>Service Distribution</u>	1987	1988	1989	1990
On-Line	385	437	453	453
Spares	40	57	62	62
TOTAL	425	494	515	515

<u>Total Fleet</u>	1987	1988	1989	1990
A-Cars	136	136	136	136
B-Cars	303	303	303	303
C-Cars	48	150	150	150
TOTAL	487	589	589	589

PROGRAM AREA B: RELIABILITY

- o At a minimum, maintain current reliability objective level performance under higher density train operations pending additional improvements which may be identified by the System Performance Study.

PROGRAM AREA C: SAFETY AND SECURITY

- o Maintain a rate of patron-related crime below those for District communities and other transit systems in the Bay Area and in other metropolitan areas.

PROGRAM AREA D: PATRONAGE & TRAVEL PROMOTION

- o Maintain acceptable quality of service as reflected by accuracy of service announcements, employee helpfulness, and station cleanliness in support of achieving the following patronage levels at planned fares (in 1,000's):

	<u>FY 86/87</u>	<u>FY 87/88</u>	<u>FY 88/89</u>	<u>FY 89/90</u>
Average Weekday:	216.7	232.5	248.0	253.7
4-hour Peak:	111.0	120.1	131.8	136.0
Offpeak:	105.7	112.4	116.2	117.7
Saturdays:	85.6	89.8	91.9	93.3
Sundays:	48.7	50.6	51.3	51.6

PROGRAM AREA E: FINANCIAL & OPERATIONAL EFFICIENCY

- o Continue to provide cost-effective and efficient service through the achievement of key financial and operational efficiency objectives.

PROGRAM AREA F: AFFIRMATIVE ACTION

- o Seek to achieve District objectives for workforce representation of minorities and women and for minority business enterprise contract activities.

PROGRAM AREA G: SYSTEM ACCESS

- o Continue to implement access and express bus improvements as identified in the District's Short Range Transit Plan.

PROGRAM AREA H: JOINT DEVELOPMENT

- o Continue station area development planning efforts in preparation for marketing specific sites for development.
- o Market specific sites as market conditions and local planning efforts dictate.

PROGRAM AREA I: EXTENSION SERVICE & CAPACITY

- o Continue to implement the Extension Right-of-Way Acquisition Program.
- o Complete the Alternatives Analysis and Final Environmental Impact Requirements for Phase I of the BART Extension Staging policy.

Figure 4
DART CAPACITY EXPANSION PROGRAM

Minimum Headway Capability (Min:Sec)	Projects Required to Achieve or Support This Headway	Anticipated Project Completion Dates	Target Expanded Service Start Dates	Peak Hour Trains, Peak Direction Transbay	Peak Period Capacity, On-Line		Total Cars Required	Available Fleet A/C - Cars # 85% B - Cars # 90%	Operating Fleet Size
					Trains	Cars			
3:45	Current Service	---	Jul 1980	16	43	A 86 B 235 T 321	102 259 361	110 (+8) 260 (+1) 370 (+9)	130 289 419
3:30	KE Track	Nov 85	1)						
	Fire Hardening (cars completed)	Jul 86	Sep 1986	17	45	A 90 B 248 T 338J	106 272 40	115 (+9) 272 (+9) 387 (+9)	136 303 439
	Delivery of 48 C-Cars	Nov 86	2)	17	48	A 96 B 248 T 385K	112 272 425	115 (+3) 272 (+3) 428 (+3)	136 303 467
3:10	Fire Hardening (removal of vent separation)	Sep 86	3)						
	Delivery of 102 additional C-Cars (150 total)	May 87							
	ICS Phase I Phase II	Jan 87 Dec 87							
	Electrification Upgrade	Mar 88 ¹							
	Daily City Turnback	Dec 87	Feb 1988	19	54 ^m	A 108 B 81 ^m C 248 ^m T 437 ⁿ	115 107 272 494	115 128 (+21) 272 (+21) 515 (+21)	136 150 303 589
2:30	New On-Board ATC (A-Car Retrofit)	Nov 87	4)						
	Daily City Yard	Mar 88							
	M-87 Interlocking	Jul 88							
	SPS Modifications	TBD	Assume Jul 1989	24	57	A 114 B 248 T 453 ^o	115 128 515	115 128 272 515	136 150 303 589
2:15	Brake Rate Modifications	TBD	5) TBD	26					

j With completion of firehardening, add 17 cars on-line (4 A's, 13 B's); 2 new consists (1-10 & 1-8) with 1 car from lighter loaded train.

k With first set of C-Cars, add 47 cars on-line (41 C's, 6 A's); 30 cars on 3 new consists (3-10's) plus 17 cars to other trains.

l Partial completion of this project prior to February 1988 is expected to provide sufficient capacity to operate this service increment.

m Includes 2 extra 10-car trains required for operation of Daily City Turnback (prior to system resignaling) which do not increase actual capacity during regular peak cycle.

n 3:10 headway permits addition of 6 consists (4-10's, 1-8 & 1-4); 52 cars on new consists, plus 17 to spares (2-10's for Daily City Turnback).

o 2:30 headway permits increase of on-line capacity of 5 consists (1-10, 3-7's, 1-5); 36 additional cars on-line (note: requires further increase in spares of 5 vehicles and assumes requirement for 2 trains in Daily City Turnback is offset through resignaling).

Figure 5

SUMMARY 5-YEAR OPERATING BUDGET PROJECTIONS

	Budgeted 1982/83 \$100,000	Projected 1983/84 \$100,000	Projected 1984/85 \$100,000	Projected 1985/86 \$100,000	Projected 1986/87 \$100,000
REVENUES					
1 Net Rail Passenger Revenue	\$77,508	\$89,160	\$95,706	\$107,865	\$119,642
2 Express Bus Revenue	1,200	1,200	1,200	1,200	1,222
3 Net Passenger Revenue	78,628	90,360	97,206	109,481	121,364
4 Investment Income	6,243	5,159	5,163	5,165	5,167
5 Other (Advertising, Concessions, Etc.) Revenue	1,619	1,250	2,727	2,895	2,895
6 Net Operating Revenue	8,062	7,089	7,706	7,892	8,066
7 Net Operating Revenues	\$86,690	\$98,049	\$104,916	\$117,373	\$129,430
EXPENSES					
8 Net Labor	107,935	115,473	124,729	134,435	142,562
9 Capital Power	21,463	21,463	21,463	21,463	21,463
10 Express Bus, Feeder Service & Shuttles	13,463	14,157	14,465	15,610	16,348
11 Other Nonlabor	21,217	22,336	24,029	25,979	27,248
12 Total Operating Expenses	\$163,096	\$177,020	\$191,335	\$207,177	\$220,410
13 OPERATING DEFICIT	(\$77,206)	(\$78,971)	(\$86,419)	(\$89,803)	(\$90,980)
FINANCIAL ASSISTANCE					
14 Property Tax Revenues	6,437	6,749	7,188	7,655	8,153
15 Sales Tax Revenues (BART 75% Share)	86,120	91,303	97,222	103,298	109,754
16 TDA ("BART Only")	1,564	601	640	682	726
17 STA, Other State Funds	1,365	2,365	1,365	1,365	1,365
18 Debt Service	(13,798)	(13,720)	(15,293)	(16,340)	(17,311)
19 Capital and Other Allocations	(4,099)	(4,228)	(4,356)	(4,491)	(4,624)
20 Total Financial Assistance	\$77,205	\$78,967	\$86,417	\$89,803	\$90,977
21 NET FINANCIAL RESULT	(1)	(4)	(2)	(1)	(3)
FINANCIAL INDICATORS					
24 Annual Peronage	61,846	63,000	67,400	70,500	73,400
25 Annual Passenger Miles	805,598	819,000	876,200	916,500	954,200
26 Fare Box Ratio: Current	48.0%	51.4%	50.8%	52.8%	55.1%
27 Operating Ratio	50.8%	51.4%	50.8%	52.8%	55.1%
28 Real Cost per Passenger Mile	\$0.187	\$0.199	\$0.201	\$0.209	\$0.214
CAPITAL ALLOCATIONS					
29 Capital Services: 1982/1985 Sales Tax Revenue Bonds	8,342	13,775	13,775	15,660	15,660
30 Sales Tax Anticipation Note Debt Service	1,200	1,200	1,200	1,200	1,200
31 Improvement Allowance	3,000	3,000	3,000	3,000	3,000
32 Planning and Joint Development	1,099	1,099	1,099	1,099	1,099
33 Extension ROW Acquisition	4,228	2,745	1,365	1,680	6,645
34 Extension ROW Acquisition	0	0	0	0	0
35 Parking Facility Construction	0	0	0	0	0
36 Total Capital Allocations	(17,898)	(21,948)	(20,314)	(23,031)	(28,135)

Figure 6

FIVE-YEAR CAPITAL PROGRAM SUMMARY

Expenditures, Cash Flow Basis
(000)

	Budgeted FY 85/86	Projected FY 86/87	Projected FY 87/88	Projected FY 88/89	Projected FY 89/90	Projected Within 5 Year	5-Year Total
Vehicle Funded	74,773	128,437	0	0	0	0	203,210
Unfunded	8,808	76,701	0	0	0	0	85,509
Facilities, Mainline Funded	30,740	2,945	7,385	0	0	0	41,068
Unfunded	44,742	49,487	5,815	0	0	90,822	190,866
Facilities, Station & Access Funded	4,991	2,070	360	0	0	850	8,271
Unfunded	850	8,863	24,951	17,434	36,028	31,209	119,355
Facilities, Support Funded	231	0	0	0	0	0	231
Unfunded	0	0	0	0	0	0	0
Train Control Funded	6,830	5,742	612	246	15	2,765	16,210
Unfunded	3,221	3,421	3,599	1,722	100	6,106	18,169
AFC & Communication Funded	4,549	862	1,025	0	0	361	6,797
Unfunded	1,175	0	286	0	0	0	1,461
Electrification Funded	3,087	2,734	2,546	0	0	137	8,504
Unfunded	300	1,737	0	0	0	0	2,037
Procurements Funded	2,694	1,525	363	0	0	284	4,866
Unfunded	200	3,128	1,496	570	0	399	5,793
Other Categories Funded	13,646	12,538	7,767	9,555	15,669	15,000	74,175
Unfunded	0	0	0	0	0	0	0
ALL CATEGORIES Funded	141,541	156,853	20,056	9,801	15,684	19,397	363,332
Unfunded	59,296	143,337	36,147	19,726	36,128	128,536	423,170
GRAND TOTAL	200,837	300,190	56,203	29,527	51,812	147,933	786,502

Figure 7

FIVE-YEAR CAPITAL PROGRAM SUMMARY

Sources, Cash Flow Basis

(000)

	Budgeted FY 85/86	Projected FY 86/87	Projected FY 87/88	Projected FY 88/89	Projected FY 89/90	Projected Within 5 Year	5-Year Total
UMTA Funds Funded	75,803	18,429	368	0	0	2,717	97,317
Unfunded	56,271	114,595	18,523	2,426	86	30,128	222,029
State Funds Funded	20,134	5,668	514	246	15	589	27,166
Unfunded	0	12,791	0	0	0	697	13,488
Regional Funds Funded	6,189	1,821	1,105	0	0	451	9,566
Unfunded	3,025	15,951	5,474	484	14	3,733	28,681
BARTD Funds Funded	38,547	130,860	18,069	9,555	15,669	15,640	228,340
Unfunded	0	0	12,150	16,816	36,028	93,978	158,972
Other Funds Funded	868	75	0	0	0	0	943
Unfunded	0	0	0	0	0	0	0
ALL SOURCES Funded	141,541	156,853	20,056	9,801	15,684	19,397	363,332
Unfunded	59,296	143,337	36,147	19,726	36,128	128,536	423,170
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I N T R O D U C T I O N

BART BACKGROUND AND PURPOSE OF SRTP

The BART District was formed in 1957 by the State Legislature in response to Bay Area growth forecasts and related future transportation needs. Following the major construction program, initial revenue operations, starting in September 1972, brought to light a variety of unanticipated problems. Over the past several years, intensive efforts have been directed toward improving reliability, service quality and capacity. This process has produced a greater understanding of the system's problems, together with "fixes" which have significantly improved train service.

BART's short-range plan presents a strategy for continued progress towards achieving a greater share of the system's full potential through increased capacity and improved system performance. The plan is the result of an ongoing process involving the District Board of Directors and management for the purpose of identifying future capital and financial requirements.

The document is divided into three chapters. The first identifies key issues and assumptions either carried over from the previous planning cycle or those which have more recently emerged. These concerns are then incorporated into the performance evaluation and planned improvements portion of the plan which is presented in Chapter II. The District's policy framework, consisting of annually adopted program area objectives, provides the framework for this discussion. Chapter III then presents the District's financial plan for supporting the capital and operating improvements identified in the previous chapter.

DISTRICT ORGANIZATIONAL OVERVIEW

Current BART organization reflects a management structure which has evolved over the past 11 years to carry out District programs and policies (see Figure i-1 on page ii). Fourteen department managers report directly to the General Manager who in turn reports to a nine-member elected Board. As Board appointed officers, three of the department managers also report directly to the Board of Directors. These are the General Counsel, Controller/ Treasurer, and District Secretary.

As the legislative body of the District, the Board of Directors establishes BART policy. Each year the Board of Directors reviews and adopts a set of goals and program area performance objectives reflecting District needs. The goals are presented in Figure i-2 on page iii. This process is part of the annual budget and short range planning cycle, and serves to guide management in budgeting for and organizing BART's labor force (consisting of approximately 2,200 employees) so that desired levels of performance may be achieved. Additionally, progress towards implementing important programs and capital improvements is continually monitored and reviewed. Other projects continue to be identified as part of the SRTP process in an effort to improve BART's effectiveness and operating performance even further. The Project Review Board, composed of key department managers, plays an important role in this process by recommending to the General Manager project priorities based on staff analysis and evaluation of District needs.

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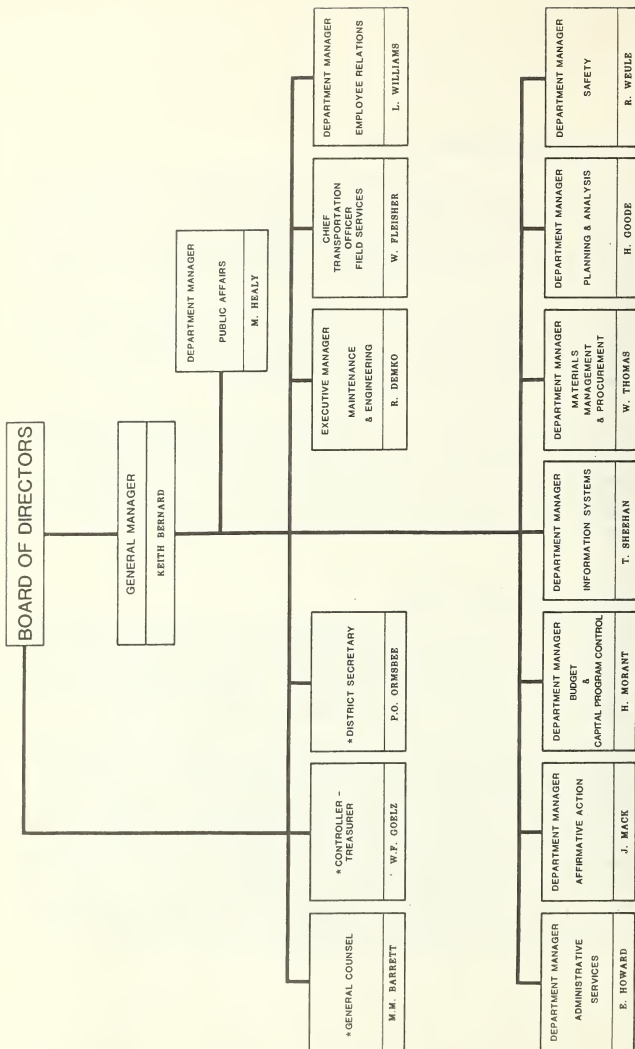
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Table i-1

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT



* BOARD APPOINTEE

Keith Bernard
 KEITH BERNARD
 JUNE 23, 1981

Figure i-2

BART GOALS FOR FY 1985/86

1. Operate scheduled 4-route weekday service with route headways of 15 minutes or less during peak and midday periods and expand service within feasible, technical, and financial limits including improved peak-hour frequency of service and capacity where needed.
2. Improve the reliability performance of the present BART system.
3. Continue to improve BART system and patron safety and emergency preparedness.
4. Increase system utilization by promoting BART travel for all purposes with special emphasis on offpeak and reverse commute trips.
5. Fund and implement the necessary capital improvements and replacements to the system.
6. Operate within available funds without incurring an unfunded deficit.
7. Maximize the contribution to operating costs from passenger revenues, consistent with reasonable fare levels, to achieve a farebox ratio above 50%.
8. Make every effort to achieve District objectives for female and minority employment and minority business enterprise participation.
9. Improve system access by means of a comprehensive program of parking expansion, BART feeder services, transit coordination, and special projects addressing elderly and handicapped mobility.
10. Develop station area sites for the realization of increased patronage and revenues, and to enhance the communities BART serves.
11. Extend BART trunk lines within Bay Area travel corridors where feasible and in support of regional land use policies.

SYSTEM OVERVIEW

The District currently operates trains over 71 miles of double mainline track, of which 20 miles are in subway, 24 miles are on elevated structures, and 27 miles are at grade. The system's 34 stations include 13 elevated, 14 subway, and 7 at grade which are spaced approximately 1/2 mile apart in downtown San Francisco and Oakland, and approximately 2 to 4 miles apart in suburban areas. Automatic fare collection equipment is located in each station to vend and process patron tickets. Free parking is provided at 22 stations in addition to one fee lot at Lake Merritt station. Approximately 22,200 automobile spaces are provided systemwide.

Trains are from 3 to 10 cars in length and contain one control equipped vehicle (A-car) at each end with interior vehicles (B-cars) making up the remainder of each consist. All station platforms are approximately 700 feet long to accommodate maximum 10-car trains. As of December 1983, BART's vehicle fleet consists of 137 A-cars and 303 B-cars.

Trains are formed and dispatched from 3 maintenance yards in the Eastbay. The central train control computer at the Lake Merritt Administration Building maintains overall supervision of train movements. Operators onboard the leading A-car of each train have full voice communication with Central Control personnel and passengers onboard, and can override automatic controls should the need arise.

To date, approximately \$1.8 billion has been invested in system construction and equipment. This investment has been financed primarily through local sources including property and sales tax revenues generated within the three BART District counties.

CURRENT SERVICE OVERVIEW

Rail service is provided between the hours of 5 a.m. and 1:30 a.m. Monday through Friday, 6 a.m. to 1:30 a.m. on Saturdays, and 9 a.m. to 1:30 a.m. on Sundays and major holidays. Closings for individual stations are timed with the schedule for the last train beginning at approximately midnight. Service frequencies (in minutes) for individual routes and line segments are as follows:

	TRANSBAY ROUTES			EASTBAY	CBD LINE SEGMENT	
	Concord/ Daly City	Fremont/ Daly City	Richmond/ Daly City	Richmond/ Fremont	San Francisco	Downtown Oakland
WEEKDAY						
Peak Hour	7.5	15	15	15	3.8	3.8
Midday	15	15	15	15	5	5
Night	20	*	*	20	20	10
SATURDAY						
Daytime	20	20	20	20	6.7	6.7
Night	20	*	*	20	20	10
SUNDAY/HOLIDAY						
All Day	20	*	*	20	20	10
*Requires transfer between Concord/Daly City and Richmond/Fremont routes						

	<u>Eastern Contra Costa</u>	<u>Western Contra Costa</u>	<u>Central Contra Costa-Alameda</u>	<u>Eastern Alameda</u>
WEEKDAY				
Peak Hour	30	30	30	30
Midday	30	30	30	30
Night	60	60	60	60
SATURDAY				
Daytime	60	30	45	30
Night	60	60	60	60
SUNDAY/HOLIDAY				
All day	60	*	60	60
*No service during this time period.				

Fares



A 4.8% rail fare discount is provided through the sale of \$21 tickets for \$20. Free transfers can be made between all BART trains. Special agreements between BART and most other Bay Area operators permit up to a 50% discount for connecting transit service (on a round-trip basis). Additionally, a \$20 BART/MUNI monthly pass is also available, allowing for unlimited BART and San Francisco/MUNI travel within San Francisco.

Fares for handicapped persons, students 5-12 years of age, and persons 65 years of age and older are 10% of the regular adult fares. Children under 5 can ride free. Regular express bus fares are 60¢ and 90¢ for one and two zone rides, respectively (with a free transfer worth 60¢ for BART patrons leaving a station). Discount bus fares are 10¢ for one zone and 20¢ for two zones for the special fare groups listed above.

BART FARE COMPONENTS AND TICKET PRICES *			
TRIP LENGTH:	Up to 6 Miles	\$0.60	
	Between 6 and 14 Miles ¹	\$0.71 + 0.055/Mile	
	Between 14 and 20 Miles	\$1.15 + 0.024/Mile	
	Over 20 Miles	\$1.29 + 0.024/Mile	
SURCHARGE:	Transbay	\$0.35	
	Oaky City ²	\$0.40	
SPEED PREMIUM:	Extra Charge for Faster (or fare reduction for slower) Than Average Trips; Based on Scheduled Travel Time	+ \$0.02/Minute -	
RESULTING FARES:	Minimum Fare Schedule ³	\$0.60	
	Maximum	-- (See reverse side)	
	Average (Weighted by all trips; average trip length = 13.5 miles)	\$2.15	
		\$1.28	
SPECIAL FARES & DISCOUNTED TICKETS: ⁴	Children Under 5 (no charge)	\$0.00	
	Children 5 to 12 (90% discount)	\$1.20	(\$12.00 Value)
	Persons 65 and Over (90% discount)	\$1.20	(\$12.00 Value)
	Qualifying Handicapped (90% discount)	\$1.20	(\$12.00 Value)
	Regular Adult (4.0% discount)	\$20.00	(\$21.00 Value)
	Excursion (entry/exit, same station)	\$2.00	
MONTHLY PASS: ⁵	Unlimited BART/MUNI Travel Within San Francisco	\$20.00	
EXPRESS BUS: (1 Zone/2 Zone)	Children Under 5 (no charge)	\$0.00	
	Children 5-12	\$0.10/0.20	
	Regular Adult	\$0.60/0.90	
	Persons 65 and over	\$0.10/0.20	
	Qualifying Handicapped	\$0.10/0.20	
TRANSFERS:	BART Express Bus (leaving rail station)	\$0.60 Value	
	SF MUNI (per MUNI round trip)	\$0.60 Value	
	AC Transit (per AC round trip) -- Peak ⁶	\$0.30 Value	
	Off Peak	\$0.70 Value	
1. Trips over 6 miles within Eastbay suburban zone (Concord-Orinda, Fremont-Bayfair, Richmond-Ashby) priced at fare indicated for trips under 6 miles. 2. Does not apply to Transbay trips. 3. Resulting fares are rounded to nearest 5¢ and encoded in Automatic Fare Collection equipment. 4. Discounted multiple-ride tickets are sold at BART ticket outlets and are not available in stations. 5. The joint BART/MUNI pass is available at all San Francisco MUNI pass outlets. 6. Weekdays 6 AM - 9 AM and 4 PM - 7 PM.			

CHAPTER I

PLANNING ISSUES

The five main issues identified previously in the Short Range Transit Plan will continue to figure prominently in District planning considerations for the foreseeable future. These five issues are:

- o Future Demand Accommodated by Current Capacity
- o New Peak Service Capacity and Demand
- o Service Quality
- o Cost Effectiveness and Productivity
- o Program Delivery

The following issues have gained new prominence recently, or reflect newly defined "emphasis areas" designated by the Urban Mass Transportation Administration:

- o System Extensions
- o Maintenance Requirements
- o Express Bus Effectiveness and Productivity
- o Energy Contingency Requirements
- o Capital Investment Planning
- o Private Sector Participation
- o Disadvantaged Business Enterprise
- o Short Range Transit Planning

In the following sections of this chapter, each of these issues will be reexamined in terms of the latest available projections, assumptions, or related information. Based on this general discussion, the plan will focus in the next chapter on a detailed assessment of District functions by program area.

FUTURE DEMAND ACCOMMODATED BY CURRENT CAPACITY

Existing BART capacity can be utilized more intensively during offpeak periods and in the non-peak direction during commute periods. However, the system is rapidly approaching saturation at existing capacity in the peak direction. This first section reviews past ridership trends including peak period load factors for current service levels, and attempts to determine how much potential future demand can be accommodated by existing capacity. In the second section, planned new peak service capacity is described and the anticipated demand response to this service is quantified.

Expectations regarding future ridership levels are perhaps the key consideration in transit short- and long-range planning. Additional emphasis is given to anticipated peak period riding as the determinant of maximum system capacity requirements. Route-by-route growth patterns will influence the distribution of available capacity, and underscore the need for capital improvements. Patronage projections affect staffing and other resource allocation, especially for vehicle maintenance and power requirements. Taken together with estimates of available financial assistance, annual ridership projections will also influence fare increase proposals. Future demand assessment is, therefore, the starting point in the SRTP process.

What is the outlook for growth of BART patronage during the upcoming planning period? A number of factors should be considered. The economic outlook, and especially the regional employment situation are especially important. Key competitive factors include gasoline prices, parking fees and availability, and highway capacity improvements. In addition, BART service quality, line-haul capacity, and accessibility influence patronage growth.

Continuing growth of the economy and of regional employment during the past year was reflected in BART ridership growth. The moderate 4.1% annual growth rate, forecast for FY 1984/85 prior to a clear indication of the strength of the economic recovery, was exceeded. Weekday trips averaged 198,800 for July-September 1984 (not including a daily average of 12,200 additional BART/MUNI Fast Pass trips for which BART is not reimbursed a full 60¢ per trip). For the comparable period a year earlier, weekday trips averaged 185,800 on the same basis. Thus, after discounting the impact of "extra" Fast Pass ridership, BART's annual growth rate exceeds 7.0%.

RESEARCH FINDINGS

The relationship between regional employment levels and BART ridership is not surprising. According to the 1982 BART Passenger Profile Survey, approximately 77% of all passenger trips are to work or work related. Of the 210,000 BART weekday trips, about 162,000 are currently for this purpose.

Work related travel is likely to be a strong component of future BART ridership growth. According to the 1983 Latent Demand Survey, BART's potential market for work trips is almost six times the current level, comprising about 450,000 commuters who each make two trips per day. The potential market includes only those people who live within 3 miles of a BART station, travel 5 miles or more to work, and work within 1 mile of a station (or have direct feeder bus access from their work site).

Anticipated regional employment growth is expected to include a sizable component in the central core areas of San Francisco and Oakland, as well as in outlying subcenters served by BART such as Concord and Walnut Creek. This employment expansion will continue to generate new BART riding, especially to those central areas where automobile parking and highway capacity are already saturated and no new highway improvements are scheduled. Given existing residential development patterns, it is reasonable to assume that regional travel patterns will not change significantly, and that increased commuting volumes caused by expanded CBD employment will flow through the corridors served by BART. Constraints on parking space expansion in the CBD areas and current high parking fees are expected to reinforce the trend toward transit.

Gasoline prices have decreased in real terms during the past year. Further decreases are possible but not expected to be significant. Despite this reduction, BART ridership growth continued. Therefore, it seems that decreases in the ridership growth rate are more likely to result from worsening economic conditions, especially as reflected in reductions in employment, than from gasoline price reductions. If previous experience is repeated, gasoline price increases are expected to produce BART ridership gains.

BART can influence ridership growth by the quality of service it provides its customers. As BART's service reliability improved substantially following the October 1980 schedule revision, the impact of this improvement was reflected in growing ridership levels during 1981 and early 1982.

New marketing efforts, such as the Shopper's Special program, have also increased patronage. This program, begun during the Fall holiday season in 1983 and repeated even more successfully in 1984, featured additional scheduled trains on Sundays providing direct service to San Francisco from the Fremont and Richmond lines.

Improved service may also have moderated the previously expected seasonal dips in patronage last year as average weekday trips showed a steady month-to-month increase. Apparently, new riders who tried the system were pleased with the service and joined the growing ranks of regular commuters. As long as BART service is perceived to be practical, economical, comfortable, and reliable, a solid base of frequent users can be expected.

ANALYSIS OF RECENT TRENDS

Average daily BART patronage has consistently trended upwards over the past four fiscal years since inauguration of the close headways program and direct service between the Richmond line and San Francisco. Actual annual averages by day of the week are shown for FY 80/81 through FY 83/84 in Table I-1. Also indicated are averages for FY 83/84 which omit those extra BART/MUNI Fast Pass trips for which BART is not reimbursed 60¢ each. Based on these adjusted FY 83/84 figures, three-year compound annual growth rates were derived which range from 4.0% (Sundays) to 6.3% (weekdays).

In Table I-1, average weekday travel is shown in terms of two peak period components, a subtotal for the peak four hours, and offpeak travel occurring midday and evenings. The two peak period components are peak direction travel, utilizing current capacity, and all remaining peak period trips. Peak direction trips reflect the sum of the maximum loadings on each of the four routes as they approach the Oakland or San Francisco CBD areas in the morning commute period and return in the afternoon. Remaining peak period trips represent the difference between the system total for the peak four hours and the peak direction trips. Intra-San Francisco trips are included in this component because they do not comprise the maximum loads in the peak direction on the three Transbay routes.

Peak direction trips have grown by an average of 3.9% annually over the last four years. Much of this growth has occurred on the Richmond-Daly City route. As will be seen below in Table I-2, the two other Transbay routes are virtually at capacity in the peak hour, and ridership on the Richmond-Fremont route seems to have leveled off despite adequate capacity.

All available cars have been utilized in peak period service since mid-1983. This available capacity has been reallocated among discretionary trains to balance load factors. Thus, trains of less than 10 cars on growing routes have been lengthened with cars transferred from slower growing, less crowded routes. This process will continue until capacity can be increased when the firehardening project is complete and receipt of the C-cars begins. In the meantime, peak direction growth at **current capacity** is expected to continue but at diminishing rates. Demand response to **new** peak capacity will be discussed in the next section of this chapter.

BART line-haul capacity and accessibility limitations may curtail ridership growth, although few real indicators exist by which to determine the extent and timing of this impact. Parking access has been constrained at most stations for several years. However, system usage has continued to increase, and there are no signs of a leveling off of growth at those stations where parking demand is greatest.

Limitations on peak period train capacity are probably more likely than parking scarcity to curtail peak direction growth. Data for the past three years suggest that BART riders may be defining acceptable loading limits for the system. In Table I-2, the ratios of riders to seated capacity, or load factors, are summarized

Table I-1

ANNUAL AVERAGE DAILY PATRONAGE, FY 80/81 THROUGH FY 83/84
OBSERVED THREE-YEAR COMPOUND ANNUAL GROWTH RATES
AND ANNUAL PATRONAGE AND PASSENGER MILES
(1,000's)

	FY 80/81	FY 81/82	FY 82/83	FY 83/84	FY 83/84 ADJUSTED (1)	3-YEAR GROWTH RATES (2)	FY 84/85 BUDGETED	FY 84/85 YTD 12/30/84
PATRONAGE AT CURRENT FARES								
Peak Direction, Current Capacity (3)	52,960	55,609	56,825	59,337	59,337	3.9%	59,930	60,659
Remaining Peak Period Trips	25,349	37,363	39,700	45,727	43,262	19.5%	42,197	43,225
Peak 4 Hours	78,309	92,972	96,525	105,064	102,599	9.4%	102,127	103,884
Offpeak (Midday & Evening)	83,657	91,090	89,768	97,483	92,229	3.3%	103,108	106,610
Average Weekday	161,966	184,062	136,293	202,547	194,828	6.3%	205,235	210,494
Saturday	65,738	74,392	70,907	79,673	76,055	5.0%	85,517	85,322
Sunday	38,858	44,243	43,398	45,497	43,709	4.0%	49,589	50,414
Annual Total Patronage at Current Fares	46,879	53,291	53,699	58,278			60,436	
Annual Total Passenger Miles	626,662	717,998	725,078	761,800			782,610	

- (1) Reflects omission of those BART/MUNI Fast Pass trips for which BART is not reimbursed 60¢. This adjustment was made so that resulting patronage growth rates, when utilized for future projections, would not overstate net rail revenue.
- (2) Compound annual growth rates, FY 80/81 - FY 83/84 as adjusted.
- (3) Measured at the peak load point on each of the four routes. Reflects total of AM and PM peak periods in the peak direction.

Table I-2

TOTAL ACTUAL DEMAND AND CAR THROUGHPUT
P.M. PEAK PERIOD, PEAK DIRECTION

	Apr-Jun 1982	Jul-Sep 1982	Oct-Dec 1982	Jan-Mar 1983	Apr-Jun 1983	Jul-Sep 1983	Oct-Dec 1983	Jan-Mar 1984	Apr-Jun 1984	Jul-Sep 1984	Oct-Dec 1984
PEAK HOUR RIDERSHIP											
Daily City/Concord	7,260	6,955	6,779	6,757	6,990	6,448	7,080	6,838	6,590	6,743	7,139
Daily City/Fremont	5,176	5,117	4,600	4,631	4,922	4,762	5,333	4,908	4,979	4,651	5,266
Daily City/Richmond	2,600	2,434	2,445	2,379	2,612	2,487	2,673	2,569	2,661	2,734	2,801
Transbay	15,036	14,506	13,824	13,767	14,524	13,697	15,086	14,315	14,230	14,128	15,206
Richmond/Fremont	1,677	1,672	1,658	1,822	1,523	1,557	1,743	1,710	1,648	1,658	1,690
Subtotal, Peak Load Points	16,713	16,178	15,482	15,389	16,047	15,254	16,829	16,025	15,878	15,786	16,896
PEAK HOUR CAR THROUGHPUT											
Daily City/Concord	68	69	70	68	70	68	69	67	67	63	70
Daily City/Fremont	47	48	45	46	44	45	48	46	46	41	46
Daily City/Richmond	24	25	27	28	27	29	30	28	30	28	29
Transbay	139	141	141	142	140	141	147	141	143	132	145
Richmond/Fremont	21	21	21	23	18	19	21	19	21	20	20
Subtotal, Peak Load Points	160	162	162	165	159	160	168	160	164	152	165
PEAK HOUR LOAD FACTORS											
Daily City/Concord	1.48	1.41	1.34	1.38	1.39	1.32	1.43	1.42	1.37	1.49	1.42
Daily City/Fremont	1.52	1.49	1.44	1.39	1.56	1.47	1.34	1.48	1.50	1.38	1.59
Daily City/Richmond	1.52	1.34	1.28	1.19	1.34	1.21	1.24	1.27	1.23	1.36	1.34
Transbay	1.50	1.42	1.36	1.35	1.44	1.35	1.43	1.41	1.38	1.49	1.46
Richmond/Fremont	1.14	1.12	1.11	1.11	1.15	1.12	1.15	1.25	1.09	1.15	1.17
Average, Peak Load Points	1.45	1.39	1.33	1.31	1.40	1.32	1.39	1.39	1.34	1.44	1.42
BALANCE OF PEAK RIDERSHIP											
Daily City/Concord	4,538	5,201	4,764	5,494	5,282	5,550	5,797	6,730	5,508	5,632	5,820
Daily City/Fremont	2,917	3,101	3,603	3,411	3,068	3,467	3,371	3,738	3,345	3,788	3,437
Daily City/Richmond	2,194	2,572	2,543	2,627	2,565	2,823	2,450	2,803	2,910	3,106	2,976
Transbay	9,649	10,874	10,910	11,532	10,915	11,840	11,618	13,271	11,763	12,526	12,233
Richmond/Fremont	1,734	1,463	1,432	1,132	1,592	1,496	1,466	1,556	1,534	1,524	1,694
Subtotal, Peak Load Points	11,383	12,337	12,342	12,664	12,507	13,336	13,084	14,827	13,297	14,050	13,927
CAR THROUGHPUT, BALANCE OF P.M. PEAK CYCLE											
Daily City/Concord	55	59	61	64	62	62	62	64	59	62	63
Daily City/Fremont	38	38	43	39	37	42	38	41	38	44	39
Daily City/Richmond	25	29	31	32	34	32	28	33	34	35	34
Transbay	119	126	135	135	133	136	128	138	131	141	136
Richmond/Fremont	25	22	20	16	21	20	19	21	21	21	20
Subtotal, Peak Load Points	143	148	156	150	154	156	147	159	152	162	156
BALANCE OF PEAK LOAD FACTORS											
Daily City/Concord	1.14	1.22	1.08	1.20	1.18	1.25	1.30	1.46	1.30	1.26	1.28
Daily City/Fremont	1.06	1.14	1.16	1.22	1.14	1.14	1.23	1.27	1.22	1.20	1.22
Daily City/Richmond	1.22	1.22	1.13	1.14	1.06	1.22	1.22	1.18	1.19	1.23	1.22
Transbay	1.13	1.20	1.12	1.19	1.14	1.21	1.26	1.34	1.25	1.23	1.25
Richmond/Fremont	0.98	0.92	0.98	1.00	1.05	1.03	1.07	1.03	1.01	1.01	1.18
Average, Peak Load Points	1.10	1.16	1.10	1.17	1.13	1.19	1.24	1.30	1.22	1.20	1.24

on a quarterly basis by route for peak direction travel. Information is shown for the P.M. peak period with separate figures for the peak 60 minutes and the balance of the peak train cycle (all available train capacity is utilized during the full peak train cycle which lasts approximately 2.5 hours). The load factors indicated measure passenger demand to seated capacity in the peak direction at the maximum load point. Averages reflect typical conditions as sampled on representative weekdays. Throughout this document, references to load factors are to be interpreted in this context.

During the peak 60 minutes, load factors on the two most heavily travelled routes have averaged between 1.40 and 1.50. Scheduled peak hour trains on these routes averaged 10 cars and thus could not be lengthened. Load factors on the Richmond-San Francisco route have fluctuated more widely and train lengths have been increased in response to growing utilization. Note that on this route, demand has continued to grow, no doubt at least in part, because of increasing capacity and continued lower load factors.

During the balance of the peak cycle, lower load factors have generally been the case. For the most part, these load factors have not exceeded 1.25. Transbay route load factors reached their highest levels during 1984.

Data for the past three years seem to indicate that future growth of travel on current peak direction capacity may occur up to the point where load factors average 1.50 during the peak hour and 1.25 during the balance of the peak cycle. While higher average loadings do occur, it does not seem advisable to build patronage and revenue estimates on the expectation of continued patron tolerance of increased crowding.

Growth of the remainder of the peak period has been the most dynamic of all travel components. This includes all trips within San Francisco (less "extra" Fast Pass trips), other peak direction trips which don't pass a peak load point, and non-peak direction trips throughout the system. This travel component, in contrast to the peak direction, is not limited by current available capacity. For this reason, continued strong growth of this segment is expected.

Weekday offpeak travel, after adjustment for "extra" BART/MUNI Fast Pass trips, has grown only 3.3% annually. Although the extra Fast Pass trips reflect a need and a useful service provided, the adjusted growth rate is considered a more realistic basis for projecting future patronage growth and for not overestimating revenue projections. Offpeak capacity is virtually unlimited, and considerable growth can be absorbed inexpensively or, in some cases, at almost no cost. This travel segment will continue to be the prime focus of BART marketing efforts.

FUTURE PROJECTIONS

Future BART patronage growth at current fares and capacity is summarized in Table I-3. These projections are based on the trends identified above for the past four years. Except for peak direction trips at current capacity, these trends are generally assumed to define future growth on account of three factors. First, the 1983 Latent Demand Survey identified a potential market well in excess of that defined by a continuation of current trends. Second, the long-run growth of weekday travel excluding "extra" Fast Pass trips, but including the effect of three fare increases, has been in excess of 5.9% annually. This period covers the 10

Table I-3

PROJECTED AVERAGE DAILY PATRONAGE AT CURRENT FARES AND CAPACITY
ANNUAL TOTALS AND YEARLY PERCENT CHANGE

FY 84/85 THROUGH FY 89/90

(1,000's)

	FY 84/85	FY 84/85	FY 84/85	FY 85/86	FY 86/87	FY 87/88	FY 88/89	FY 89/90
	BUDGETED	YTD 12/30/84	Percent Change (BUDGET)	FY 85/86 PROJECTED	FY 86/87 PROJECTED	FY 87/88 PROJECTED	FY 88/89 PROJECTED	FY 89/90 PROJECTED
PATRONAGE AT CURRENT FARES								
Peak Direction, Current Capacity	59,930	60,659	3.9%	62,268	62,890	63,519	64,154	64,796
Remaining Peak Period Trips	42,197	43,225	16.0%	48,965 ^a	52,050	55,329	58,815	62,520
Peak 4 Hours	102,127	103,884	8.9%	111,233	114,940	118,848	122,969	127,516
Offpeak (Midday & Evening)	103,108	106,610	6.3%	109,604	116,509	123,849	131,651	139,945
Average Weekday	205,235	210,494	7.6%	220,836	231,449	242,697	254,620	267,261
Saturday	85,517	85,322	5.0%	89,793	94,282	98,997	103,946	109,144
Sunday	49,589	50,414	4.0%	51,573	53,635	55,781	58,012	60,333
Annual Total Patronage at Current Fares	60,436		6.0%	64,062	67,117	70,351	73,774	77,398

a. Reflects 6.3% increase over FY 83/84 Actual

years since Transbay service was inaugurated. Third, BART intends to continue and intensify its offpeak marketing program. The main focus of this program is on non-peak use of the system by shoppers.

Weekend travel is projected to grow by 4% on Sundays and 5% on Saturdays. Weekday non-peak direction travel is projected to increase on the average by 6.3% annually. Growth of peak direction travel at current capacity is expected to remain at 3.9% for one more year and then drop to 1.0% annually thereafter, reflecting anticipated effects of line-haul capacity constraint.

The three main premises underlying these future demand projections at current capacity are also expected to influence the potential response to increased peak direction service provided by the BART Capacity Expansion Program. The dimensions of this service and the demand response to it will be covered in the next section of this chapter.

ADEQUATE CAPACITY

In view of the likelihood of widespread latent demand and continued patronage growth, adequate capacity is the most pressing issue now facing BART. This factor will be especially acute during the next several years.

Expansion of BART capacity is the goal of the District's Capital Improvement Program which is now well underway. Updates to project schedules have been made since last year's Short Range Transit Plan. The current status of major project schedules is summarized in Figure I-1. Note that the completion dates or schedule indicated here and elsewhere in this document for these projects refer to the most recent planning estimates for project completion and may differ from contract schedule dates.

The BART Capacity Expansion Program developed in its current form in the 1983 Short Range Transit Plan is shown in Table I-4. The program is designed to reduce the minimum headway capability, thereby permitting more trains to be placed in service. Projects required to achieve or support each successive headway reduction are identified together with their respective completion dates.

After each necessary set of projects is complete, service expansion can take place. The proposed target dates for service expansion are shown in Table I-4. The target dates reflect current plans for capital project implementation. Completion dates may be altered by funding limitations or changes necessary for successful project implementation. The key consideration in adding new service is to maintain or enhance current reliability standards, even if that requires additional time for solving problems and testing in order to assure a smooth transition to higher service levels. BART's guiding philosophy is to take the time necessary to solve problems, make sure that the solutions are right, and insist on high quality products.

Each higher service level is characterized by the number of peak hour, peak direction Transbay trains, the total number of peak period trains and cars on-line, the spare car requirements, and the total cars required. Projected availability figures are shown for comparison purposes. The C-car project will add 150 vehicles to the District fleet. The impact of the C-car delivery schedule on total fleet size during the planning period is indicated in Table I-4.

Figure I-1

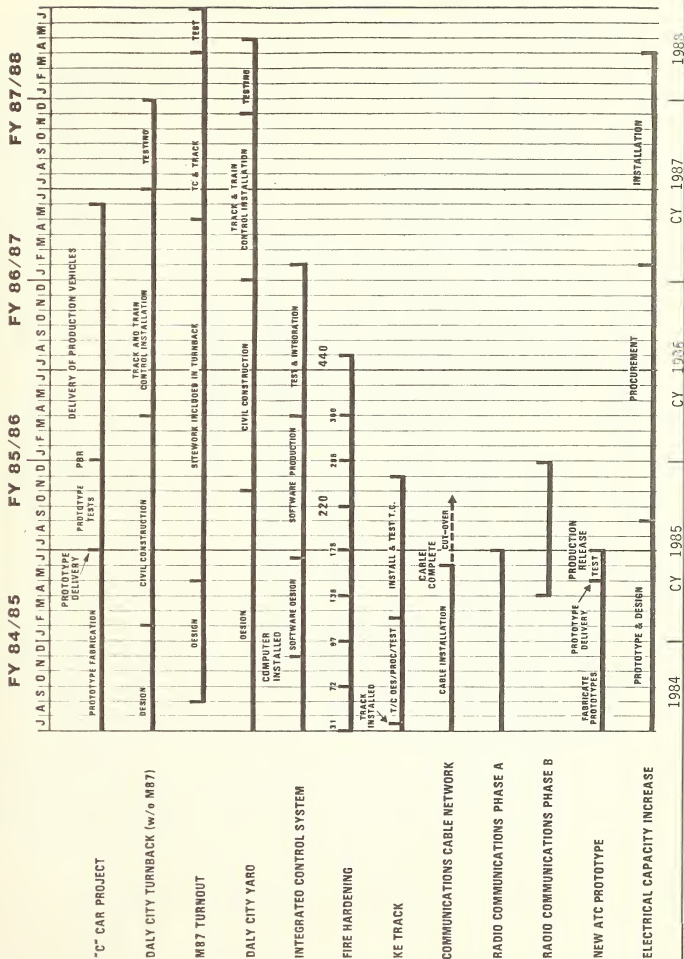
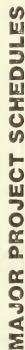


Table 1-4

BART CAPACITY EXPANSION PROGRAM

Minimum Headway Capability (Min:Sec)	Projects Required to Achieve or Support This Headway	Anticipated Project Completion Dates	Target Expanded Service Start Dates	Peak Hour Trains, Peak Direction Transbay	Peak Period Capacity, On-Line Trains	Spare Cars	Total Cars Required	Available Fleet A/C - Cars # 85% B - Cars # 90%	Operating Fleet Size
3:45	Current Service	---	Jul 1980	16	43	A 86 B 235 T 321	102	110 (+8) 260 (+1) 370 (+9)	130 289 419
3:30	KE Track	Nov 85	1)						
	Fire Hardening (Cars completed)	Jul 86	Sep 1986	17	45	A 90 B 248 T 358J	106	115 (+9) 272 (+9) 387 (+9)	136 303 439
	Delivery of 48 C-Cars	Nov 86	2)	17	48	A 96 B 248 T 385K	112	115 (+3) 41 428 (+3)	136 48 589
3:10	Fire Hardening (removal of vent separation)	Sep 86	3)						
	Delivery of 102 additional C-Cars (150 total)	May 87							
	ICS Phase I	Jan 87							
	Electrification Upgrade	Mar 88 ¹	Feb 1988	19	54 ^m	A 108 B 248 ^m T 437 ⁿ	115	115 (+21) 272 (+21) 515 (+21)	136 150 303
	Daily City Turnback	Dec 87					494		589
2:30	New On-Board ATC (A-Car Retrofit)	Nov 87	4)						
	Daily City Yard	Mar 88							
	M-87 Interlocking	Jul 88	Assume						
	SPS Modifications	TBD	Jul 1989	24	57	A 114 B 248 T 455 ^o	115	115 128 515	136 150 303
2:15	Brake Rate Modifications	TBD	5) TBD	26			515		589

j With completion of firehardening, add 17 cars on-line (4 A's, 13 B's); 2 new consists (1-10 & 1-8) with 1 car from lighter loaded train.

k With first set of C-Cars, add 47 cars on-line (41 C's, 6 A's); 30 cars on 3 new consists (3-10's) plus 17 cars to other trains.

l Partial completion of this project prior to February 1988 is expected to provide sufficient capacity to operate this service increment.

m Includes 2 extra 10-car trains required for operation of Daily City Turnback (prior to system resignaling) which do not increase actual capacity during regular peak cycle.

n 3:10 headway permits addition of 6 consists (4-10's, 1-8 & 1-4); 52 cars on new consists, plus 17 to spares (2-10's for Daily City Turnback).

o 2:30 headway permits increase of on-line capacity of 5 consists (1-10, 3-7's, 1-5); 36 additional cars on-line (note: requires further increase in spares of 5 vehicles and assumes requirement for 2 trains in Daily City Turnback is offset through resignaling).

Current BART service is nearly at capacity in terms of effective use of available B-cars. Although additional A-cars are available, any new trains would require taking B-cars from already scheduled consists. For this reason, no more peak service trains will be added until after the vehicle fire hardening program is completed in mid-1986, as is shown in Table I-4. Completion of this program, and commencement of delivery of the new C-cars, will augment the fleet somewhat by late 1986. But significant expansion of capacity will not be possible until early-1988 when all of the new C-cars are delivered and available for service and four key capacity expansion projects are completed: the Daly City Turnback, the new Integrated Control System (ICS), removal of the vent separation requirement based on CPUC authorization, and the Electrification Upgrade.

SERVICE EXPANSION CONSIDERATIONS

For several years it has been recognized that BART capacity expansion is essential. As noted above, peak direction ridership is approaching the average peak hour crowding limits that patrons are apparently willing to tolerate. Latent demand survey research indicates that current potential ridership is several times the number of commuters actually using the system. And, growth of new CBD-oriented peak period travel is also likely given current and projected office expansion plans in San Francisco and Oakland. Significant expansion of alternate transportation capacity, especially during the next few years in the Transbay corridor, is not planned.

The BART Capacity Expansion Program is designed to meet this need to transport more commuters, especially in the Transbay corridor. As the projects which comprise this program are completed, BART will be able to increase Transbay service capacity in several phases. This phased expansion of capacity is summarized in Table I-4.

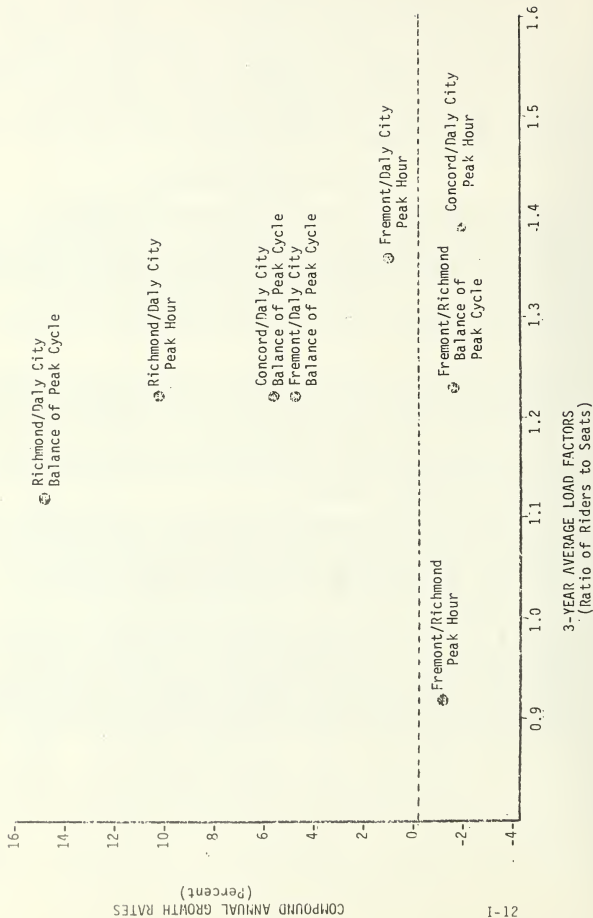
To which routes should the extra trains be added? What level of demand response can be anticipated as additional trains are added? These considerations are reviewed in the following paragraphs.

The relationship between peak period, peak direction load factors and growth rates by route provides one indicator of where to add capacity. Other factors to consider on a route-by-route basis are the magnitude of current peak ridership, the level of peak load factors (especially on the most crowded trains), the availability of alternative transit services and the level of congestion on parallel freeways.

Figure I-2 illustrates the relationship between average load factors and 3-year compound growth rates for peak period, peak direction travel. For Transbay service, lower load factors have resulted in higher growth rates over the last three years. Crowding has been more severe during the peak 60 minutes and growth has been lower than for the balance of the peak cycle. This probably reflects some shifting of former peak hour riders with "flex-time" options to earlier or later less crowded trains.

Figure 1-2

AVERAGE LOAD FACTORS AND GROWTH RATES BY ROUTE,
P.H. PEAK CYCLE, FY 81/82 - FY 83/84



The points in Figure I-2 have been connected by route in Figure I-3 to define a simplified "model" of anticipated ridership growth given reduced load factors made possible by expanded capacity. This set of models suggests that the Transbay peak period market will continue to be very dynamic, especially if capacity can be expanded. Of the three Transbay routes, Richmond and Concord appear to have the highest growth potential based on the analysis summarized in Figure I-3.

Other factors to consider in deciding where and when to add new peak period capacity include the total magnitude of peak direction ridership and the degree of maximum crowding (the highest train load factors) by route. During 1984, total peak period, peak direction ridership by route was as shown in Table I-5. Ridership on the Concord route exceeds Fremont/Daly City patronage by 47%, Richmond/Daly City trips by 120%, and Richmond/Fremont Volume by 288%.

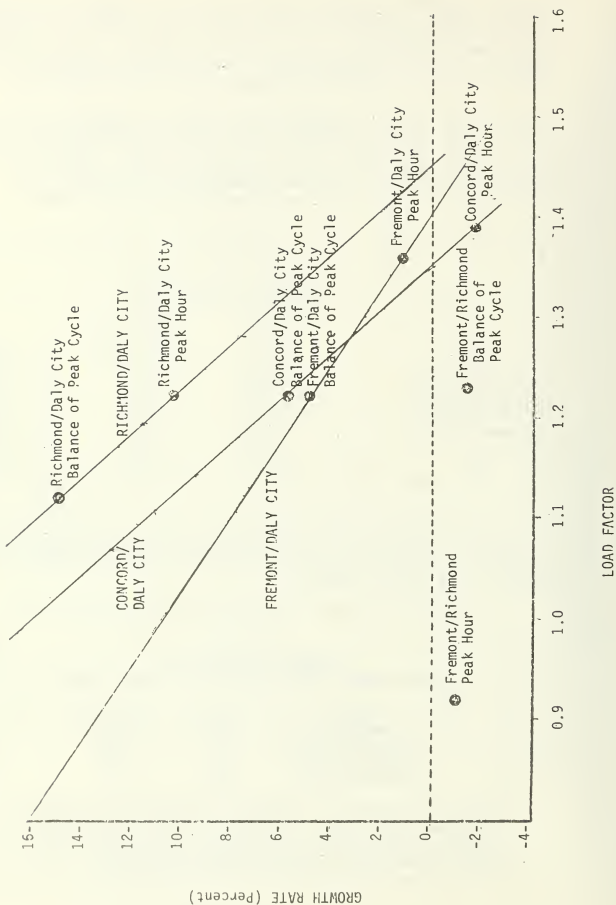
Table I-5			
PEAK PERIOD, PEAK DIRECTION RIDERSHIP BY ROUTE, 1984			
<u>Route</u>	<u>Peak Hour</u>	<u>Balance of Peak Cycle</u>	<u>Total</u>
Concord/Daly City	6,888	5,689	12,577
Fremont/Daly City	5,057	3,492	8,549
Richmond/Daly City	2,717	2,992	5,709
Richmond/Fremont	<u>1,685</u>	<u>1,555</u>	<u>3,240</u>
Total	16,347	13,728	30,075

Maximum train load factors differ significantly by route, as shown in Table I-6. This tabulation indicates the average load factor for the most crowded train on each route during the P.M. peak period in 1984. The load factors reflect actual ridership versus scheduled capacity.

Table I-6		
AVERAGE LOAD FACTOR FOR MOST CROWDED TRAIN ON EACH ROUTE, P.M. PEAK, 1984		
<u>Route</u>	<u>Train #</u>	<u>Load Factor</u>
Fremont/Daly City	109	1.78
Concord/Daly City	391	1.48*
Richmond/Daly City	451	1.26
Richmond/Fremont	225	1.21

*Maximum 10-car consist load factor. One 7-car consist recorded a 1.55 load factor (#393). The length of this extra peak consist is limited by layup capacity at Daly City. When layups on the KE track are authorized, train #393 will be lengthened.

Figure I-3
LOAD FACTOR - GROWTH RATE MODELS



The most crowded train load factor is an index of patron trip scheduling preference or constraint. Over the last several years, the peak has broadened on the Concord route as more riders adjusted their travel schedules in order to take advantage of lower load factors in the balance of the peak cycle. A significant proportion of Fremont/Daly City riders is unwilling or unable to do so. Thus, this route experiences the highest level of crowding on the most heavily loaded train.

Capacity of the bus transit system and the highway network in each corridor should also be considered in allocating future BART peak capacity increases. The Concord route effectively has no parallel bus service, and virtually all highway traffic is constrained to the congested Caldecott Tunnel. The Richmond corridor is facing increased traffic congestion on Interstate 80, and this has reduced the travel time advantage of AC Transit service compared to BART. The corridor stretching south from Oakland to Fremont is served by State Highway 17 and Interstate 580, each of which is less congested than Interstate 80. AC Transit service, especially in the Interstate 580 corridor, is attractive and competitive with BART. Delays affecting traffic approaching the San Francisco-Oakland Bay Bridge are also increasing. This condition is beginning to affect the toll free carpool-bus lane through the Toll Plaza.

PLANNED SERVICE INCREMENT AND EXPECTED DEMAND RESPONSE

All of the above factors have been considered in developing the proposed allocation of future BART service increments among the four routes currently operated. Planned additional trains are indicated by route in Table I-7 together with existing service. The proposed plan calls for a phased increase of 14 trains from the 43 now operated to 57 by FY 89/90. Current plans call for four increments. Planned service increments reflect estimated requirements based on current demand projections. Should these requirements change prior to start-up dates, service increments will be modified accordingly.

First Increment

In the first increment two trains would be added following the completion of the vehicle firehardening program. At that time, 17 additional cars should be available. These cars, plus 1 B-car from a less crowded train, would be put into service as 8-car and 10-car consists. The 10-car train would be added to the Fremont/Daly City route in the peak hour. The 8-car train would augment Concord/Daly City service in the balance of the peak cycle. These two routes would be expanded in the first service increment because they currently experience the highest average peak load factors and carry the highest volume of riders. This increment should reduce somewhat the crowding on the most heavily loaded train, on the Fremont route.

According to current plans, these service adjustments would be accomplished without significant changes in the current published weekday service timetable. The extra Fremont train would be inserted into the peak hour schedule with minor adjustments to the schedules of the leading and following trains. This addition would take advantage of the system's ability to absorb some schedule compression for a short interval without significant impact on overall train service. On the Concord route, three extra trains now run in 7 1/2-minute headways between the basic 15-minute intervals. The proposed extra Concord train would be scheduled in another 7 1/2-minute slot in the balance of the peak cycle.

Table 1-7

DESCRIPTION OF PROPOSED PEAK PERIOD SERVICE

Headways and Trains On-Line

Service Increment	FY 85/86		FY 86/87		FY 87/88		FY 88/89	FY 89/90
	Sep-Dec	Jan-Jun	First	Second	Jul-Dec	Jan-Jun		
Headways (Min:Sec)								
Minimum Sustainable	3:15							
Minimum Scheduled	3:45	3:05		3:05	3:05	2:40 ^d	2:40	1:40 ^f
Basic Route: Peak ^a /Midday	15:00	3:45		3:45	3:45	3:10 ^d	3:10	2:30 ^f
		15:00		15:00	15:00	12:40/15:00	12:40/15:00	10:00/15:00
Trains On-Line, By Route								
Concord/Daly City								
Peak 60 Minutes	7	7	7	7	7	8	8	12
Balance of Peak	7	+1	8	9 ^c	9	+1	10	-3
Fremont/Daly City								
Peak 60 Minutes	5	+1	6	6	6	+1	7	7 ^g
Balance of Peak	5		5	6 ^c	6		7	7
Richmond/Daly City								
Peak 60 Minutes	4	4	4	4	4	4	4	6
Balance of Peak	5	5	+1	6	6	6	6	-1
Transbay								
Peak 60 Minutes	16	+1	17	17	17	+2	19	+5
Balance of Peak	17	+1	18	+3	21	+2	23	-3
Richmond/Fremont								
Peak 60 Minutes	5	5	5	5	5	5	5	7
Balance of Peak	5		5	5	5		5	+1
Total								
Peak 60 Minutes	21	+1	22	22	22	+2	24	+7
Balance of Peak	22	+1	23	+3	26	+2	28	-2
Total	43	+2	45	+3	48	+4	52	+5

a. Not including extra peak Concord trains.

b. Reflects completion of and capabilities provided by Sectional Release at M87, availability of additional cars following completion of Fire Hardening, and completion of KE Track. Extra peak hour train will be inserted into existing schedule with most trains unaffected.

c. Anticipates delivery of 48 C-cars.

d. Anticipates completion of and capability provided by Fire Hardening (removal of vent separation), Daly City Turnback, ICS Phase II, delivery of 102 additional C-cars (150 total received), and Electrification upgrade.

e. Does not include 2 10-car trains required for operation of Daly City Turnback (prior to system resignaling).

f. Depends on capability provided by Daly City Yard, M-87 Interlocking, New On-Board ATC (A-car retrofit) and modifications recommended by the System Performance Study.

g. Peak hour cycle begins and ends with this route; seventh train included in balance of peak totals below.

Second Increment

The second increment is planned to begin after delivery of the first 48 C-cars. At the 85% availability objective, this will add 41 C's to service. It is also planned that 6 of the remaining 9 unutilized A-cars would be added. This 47-car increment will provide three new 10-car trains and 17 cars with which to lengthen existing consists as necessary.

Since no further peak hour headway reduction is planned as a part of the second increment, the three new 10-car trains will be added to the balance of the peak cycle in much the same way as the first increment Concord train was added. That is, shorter-headway peak hour operation would be extended into the shoulder of the peak. This will entail only minor revision of the published timetable.

According to current plans as shown in Table I-7, a train would be added to each of the three Transbay routes. As noted above, patrons on these routes experience the highest load factors, and patronage growth is the most responsive to lower load factors. Each of these three trains would be a 10-car consist. The remaining 17 cars would be used to lengthen consists not at the 10-car limit, as growth requires. The anticipated allocation shown in Table I-8 calls for 8 cars added to Richmond/Daly City peak hour trains, 3 cars to trains on this route in the balance of the peak cycle, and 6 cars to the Richmond/Fremont route.

Third Increment

The third service increment is targeted to follow completion of the five projects shown in Table I-4 as necessary to achieve a minimum scheduled headway of 3 minutes 10 seconds. These 5 projects include PUC approval of fire hardening and removal of the vent separation requirement, delivery of the remaining 102 C-cars, and completion of ICS, the electrification upgrade and the Daly City Turnback.

Current plans call for the addition of six trains and 69 cars in the third increment. Operation of the Daly City Turnback will require two 10-car consists in addition to the normal on-line requirements. These two trains reflect the additional time needed for the Transbay routes to transit the Turnback and, therefore, do not represent an increase in effective capacity. Concurrent with this service increment, the spares requirement will be increased in recognition of the larger number of trains in service. The net result of the Turnback and increased spares requirements is that on-line capacity will grow by four trains and 32 cars.

The reduction in the minimum headway to 3 minutes 10 seconds will permit the addition of two trains in peak hour Transbay service. Based on the service expansion factors reviewed above, current plans call for one more peak hour train on each of the Concord and Fremont/Daly City routes. Each would be a 10-car consist. The remaining 12 cars would comprise two additional trains in the balance of the peak cycle, one each on the same two routes. The general reduction in headways associated with this increment will require revision of the published weekday timetable.

Table 1-8

SERVICE REQUIREMENTS AND PROJECTED CAR ALLOCATION BY ROUTE
BASED ON ANTICIPATED PM PEAK DEMAND, CAR AVAILABILITY, AND PROPOSED SERVICE EXPANSION

Service Increment	FY 84/85 & FY 85/86 ^a		FY 86/87		FY 87/88		FY 88/89 ^d		FY 89/90 ^f	
	Sep-Dec ^b		Jan-Jun ^c		Jul-Dec ^c		Jan-Jun ^d			
	First	Second	First	Second	Third	Fourth				
Concord/Daly City	70	70	70	70	70	70	80	80	+35	115
Peak 60 Minutes	64	72	+10	82	82	82	90	90	-20	70
Balance of Peak										
Fremont/Daly City	50	60	60	60	60	60	70	70	70	70
Peak 60 Minutes	38	38	+10	48	48	48	52	52	52	52
Balance of Peak										
Richmond/Daly City	32	32	+8	40	40	40	40	40	+14	54
Peak 60 Minutes	27	27	+13	40	40	40	40	40	40	40
Balance of Peak										
Richmond/Fremont	25	24	+2	26	26	26	26	26	+6	32
Peak 60 Minutes	15	15	+4	19	19	19	19	19	+1	20
Balance of Peak										
Total On-Line	86	90	+6	96	96	96	104	104	+10	114
A/C-Cars	235	248	+13	289	289	289	313	313	+26	339
B/C-Cars	321	338	+17	385	385	385	417	417	+36	453
Total										
Spares	16	16	16	16	16	16	14	14	14	14
A/C-Cars	24	24	24	24	24	24	43	43	+5	48
B/C-Cars										
Service Requirements	102	106	+6	112	112	112	122 ^e	122 ^e	+6	128
A/C-Cars	259	272	+13	313	313	313	372 ^e	372 ^e	+15	387
B/C-Cars	361	378	+17	425	425	425	494 ^e	494 ^e	+21	515
Total										
Available Fleet	110	115	156	156	156	156	243	243	243	243
A/C-Cars	260	272	272	272	272	272	272	272	272	272
B-Cars	370	387	428	428	428	428	515	515	515	515
Total										
Surplus (shortage)	8	9	3	3	3	3	21	21	0	0
A/C-Cars	1	0	0	0	0	0	0	0	0	0
B/C-Cars	9	9	3	3	3	3	21	21	0	0
Total										

a. Reflects 43-train service.

b. Reflects 45-train service.

c. Reflects 48-train service.

d. Reflects 52-train service.

e. Includes 20 cars required for operations with Daly City Turnback.

f. Reflects 57-train service.

Fourth Increment

The final increment during the current five-year planning cycle is tentatively anticipated to begin in July 1989. The minimum headway reduction to 2 minutes 30 seconds depends on the capability provided jointly by four projects: retrofit of new on-board ATC into existing A-cars, and completion of the Daly City Yard, the M-87 interlocking and certain modifications called for by the System Performance Study. Attainment of the project schedule for these latter modifications will depend somewhat on funding availability. However, it is assumed that these improvements can be completed by July 1989.

Attainment of the 2 minutes-30 second headway capability will allow the scheduling of five more Transbay trains in the peak hour. This will permit a shift of capacity from the shoulders of the peak into the peak hour when most riders prefer to travel. Accordingly, the number of peak hour trains on the Concord and Richmond/Daly City routes will increase by four and two respectively, with a net increase for the entire peak cycle on each route of one train. The reduction in headways at this point will also permit addition of trains on the Richmond/Fremont route.

It is also anticipated that resignaling efforts systemwide will reduce run times enough to offset the two trains required for the Daly City Turnback. In effect, Transbay throughput during the peak period will increase by two trains on account of resignaling. Expansion of the number of trains in service will increase the spares requirement by 5 cars. The fourth increment will add 5 trains and 36 cars on-line. Another timetable revision would be forthcoming at this point.

According to current plans, all available vehicles including the C-cars will be in service as of the fourth increment. This is indicated in Tables I-4 and I-8. Expansion of service capacity beyond this level will require the acquisition of additional rolling stock.

The currently planned number of vehicles could be utilized more intensively during the peak hour in the fifth increment when headways can be reduced to 2 minutes 15 seconds. That is, more trains could be scheduled in the peak hour and made up with cars redistributed from the balance of the peak cycle. However, this is probably only a short-term solution, of only marginal benefit. If peak demand growth meets or exceeds the forecast rate, more vehicles will be required.

This condition is not expected to occur within the current five-year plan timeframe, and is thus not pursued in greater depth at this point. However, the issue of buying additional vehicles should be reconsidered while the current car contract is in force and more vehicles might be purchased. Obviously, the key factors influencing this decision will be the availability of capital funds and the indication of continued strong peak period demand.

Service Increment Demand Expectations

Potential new demand based on Latent Demand Study analysis has been estimated to be several times current ridership levels. The four service increments just described collectively represent a 41.1% increase in scheduled peak direction car throughput for all four routes. This relative increase in capacity is only a fraction of the potential increase in demand. For these reasons, it is assumed that the incremental demand which will occur in response to this new capacity will be equivalent to the additional seats times the projected peak period load factors on existing service.

Currently, peak hour load factors on the three Transbay routes average 1.46. With the inclusion of Richmond/Fremont service, system peak hour load factors average 1.43. Load factors for the balance of the peak cycle now average 1.25.

For purposes of projecting incremental demand, load factors on new service were assumed to be 1.40 in the peak hour and 1.25 for the balance of the peak cycle. The planned allocation of new service for both the peak hour and the balance of the peak results in an average load factor for all four increments of 1.31.

The size of each of the capacity increments in terms of peak direction seat throughput is shown in Table I-9 together with the assumed demand response. This reflects conditions in one peak period, e.g., P.M. peak. For purposes of this analysis, the two peaks are assumed to be symmetrical. Therefore, daily peak demand equals twice the level of one peak period. Each of the four increments' demand figures has been converted to a weekly amount and annualized according to the start dates shown in Table I-4. The total annual incremental peak direction forecast demand for each fiscal year is shown in Table I-10 as an equivalent weekday volume, together with the demand projections already presented in Table I-3.

As indicated in Table I-10, average weekday ridership at current fares, including the incremental peak direction demand response to the planned new service, is expected to reach 293,600 trips by FY 89/90.

Provision of the increased capacity necessary to serve the anticipated demand while continuing to operate reliable train service is essential during the current SRTP timeframe.

SERVICE QUALITY

Although provision of adequate capacity has become the District's top priority, this emphasis in BART policy does not mean that reliability can be taken for granted. Indeed, improved service quality is largely responsible for attracting and maintaining the addition to BART patronage experienced during recent years (see Table I-11 on page I-23). Continued growth of BART ridership will depend heavily on the extent to which service quality can be maintained and improved. The issue of service quality addresses system performance and its impact on patronage. Research in this area of transit performance indicates that ridership tends to be more responsive towards changes in service quality than in fares. BART patronage growth since October 1980 supports this finding.

Because scheduling more trains on the system will alter the current operating environment, it will be essential to maintain system reliability while implementing capacity improvements. Work completed as a part of the System Performance Study has contributed to the identification of achievable capacity objectives in the context of current high reliability standards.

Many improvements in system performance were produced by the Reliability Improvement Program. Results of this effort are best exemplified by increased on-time performance, improved car and train throughput, and reduced incident rates for both passenger offloads and AFC equipment.

Table I-9

PROPOSED INCREMENTS TO PEAK PERIOD CAPACITY
AND PROJECTED DEMAND RESPONSE PER WEEKDAY

	<u>First Increment</u>	<u>Second Increment</u>	<u>Third Increment</u>	<u>Fourth Increment</u>
<u>Peak Hour</u>				
Additional Cars	10	10	20	35
Seated Capacity	720	720	1,440	2,520
Demand Response @ 1.4 Load Factor	1,008	1,008	2,016	3,528
<u>Balance of Peak Cycle</u>				
Additional Cars	8	37	12	1
Seated Capacity	576	2,664	864	72
Demand Response @ 1.25 Load Factor	720	3,330	1,080	90
<u>Total, One Peak Period</u>				
Additional Cars	18	47	32	36
Seated Capacity	1,296	3,384	2,304	2,596
Demand Response One Peak	1,728	4,338	3,096	3,618
<u>Demand Response</u>				
Both Peaks	3,456	8,676	6,192	7,236

Table I-10

PROJECTED AVERAGE DAILY PATRONAGE AT CURRENT FARES, FY 84/85 - FY 89/90
INCLUDING RESPONSE TO ADDITIONAL PEAK DIRECTION CAPACITY
ANNUAL TOTALS AND PERCENT CHANGE
(1,000's)

	FY 84/85 BUDGETED	FY 84/85 YTD 12/30/84	Percent Change (BUDGET)	FY 85/86 PROJECTED	Percent Change PROJECTED	FY 86/87 PROJECTED	Percent Change PROJECTED	FY 87/88 PROJECTED	Percent Change PROJECTED	FY 88/89 PROJECTED	Percent Change PROJECTED	FY 89/90 PROJECTED
PATRONAGE AT CURRENT FARES												
Peak Direction, Current Capacity	59,930	60,659	3.9%	62,268	1.0%	62,890	1.0%	63,519	1.0%	64,154	1.0%	64,796
Remaining Peak Period Trips	42,197	43,225	16.0%	48,965	6.3%	52,050	6.3%	55,329	6.3%	58,815	6.3%	62,520
Response To Peak Direction Service	0,000	0,000		0,000		7,599	103.1%	15,436	24.2%	19,176	37.3%	26,328
Peak 4 Hours, Subtotal	102,127	103,884	8.9%	111,233	10.2%	122,539	9.6%	134,284	5.9%	142,145	8.1%	153,644
Offpeak (Midday & Evening)	103,108	106,610	6.3%	109,604	6.3%	116,509	6.3%	123,849	6.3%	131,651	6.3%	139,945
Average Weekday	205,235	210,494	7.6%	220,836	8.2%	239,048	8.0%	258,133	6.1%	273,796	7.2%	293,589
Saturday	85,517	85,322	5.0%	89,793	5.0%	94,282	5.0%	98,997	5.0%	103,946	5.0%	109,144
Sunday	49,589	50,414	4.0%	51,573	4.0%	53,635	4.0%	55,781	4.0%	58,012	4.0%	60,333
Annual Total Patronage	60,436		6.0%	64,062	7.9%	69,093	7.6%	74,364	5.9%	78,760	7.0%	84,244

Table I-11
OPERATING PERFORMANCE AND RELIABILITY COMPARISON

REVENUE SERVICE PARAMETERS	JULY 1976	JUL-SEP 1980 ¹	JUL-SEP 1982 ¹	JUL-SEP 1984 ¹
Total Ridership	2,771,533	3,827,172	4,587,320	5,065,032
Number of trains scheduled during peak service hours	33	44	42	43
Car Availability at 8 AM (Percent)	61%	83%	88%	90%
Percent of scheduled runs completed	90%	96%	99%	99%
Percent of train runs "On Time"	46%	85%	94%	95%
Revenue car hours	57,707	83,699	90,554	93,352
Total revenue & nonrevenue vehicle equipment failures (per 1,000 car-hours)	20.2	11.1	11.5	11.1
Vehicle equipment caused unscheduled train removals (per 1,000 car-hours)	5.4	2.6	1.4	1.5
Total offloads (per 1,000 car-hours)	2.4	1.6	1.2	1.6
Automatic fare collection incidents (per 1,000 passenger trips)	N/A	0.52	0.34	0.30
Percent of scheduled peak period, peak direction, Transbay throughput:				
Train:	N/A	N/A	98%	98%
Cars:	N/A	N/A	97%	97%
Farebox ratio	39% ²	45%	47%	48%
Operating ratio	42% ²	51%	51%	54%
Annual miles per car:				
BART average	N/A	75,000	75,000	73,000
Industry average	N/A	50,000	50,000	N/A
Vehicle related maintenance headcount	425	360	360	N/A

1. Monthly average for 3-month period noted.

2. Ratios are for FY 1975/76.

Earlier improvements in operating dependability supported BART's decision in 1978 to publish a train schedule for both evening and weekend service. Daytime weekday train performance improvements as reflected by a 95% on-time record justified publication of a similar schedule for weekday operations in April 1983. This timetable constitutes a more stringent basis for assessing service quality which is available to all patrons and other interested persons. Maintenance of high quality service will be increasingly challenging, especially as BART commences its service expansion program.

COST EFFECTIVENESS AND PRODUCTIVITY

Cost effectiveness and productivity are integral to overall financial performance and the economies of providing expanded levels of service. Favorable performance in these, as well as for other areas, is directly dependent upon management's ability to formulate and implement effective programs which can keep pace with inflation. Recent trends for District financial performance indicate that this has in fact occurred, where stringent budget controls and above forecast revenues, in large part due to better service, have produced better than anticipated results. In real terms, BART costs per passenger, per passenger mile and per vehicle mile have declined over the past five and one-half years, as shown by the constant dollar comparisons in Figures I-4 and I-5. At the same time, BART patronage and vehicle miles per equivalent employee have risen. This is solid evidence of BART productivity. Additional gains in the future will be harder to attain, thus management efforts should be focused on strategies to hold the line on expense, and to evaluate new ways of allocating resources.

Future operating budget considerations will be examined. However, several factors first need to be recognized in the general context of financial effectiveness.

Staffing costs comprise the largest component of total operating expense. While this may decline somewhat if electrical energy assumes a larger proportion, staffing cost is the one factor most directly under District control. Staffing levels materially affect labor cost, and to the extent that output can be increased without proportional increases in staffing, future labor cost increases can be held within the limits of available resources.

Secondly, although available information suggests that electrical energy cost increases may be less severe than previously anticipated, District efforts will need to focus on developing operating strategies which can lead towards reduced levels of power consumption (i.e., reduced car miles), consistent with stated load factor objectives.

Finally, the planned streamlining of the BART Express Bus service should be carried out as anticipated. This component of expense has increased in recent years, and its farebox ratio is well below the standard set for overall District operations.

On the funding side, increasing transit operator demands for regionally allocated discretionary funds are expected to limit BART's share of these resources. Additionally, capital funding limitations will require BART to continue to generate a portion of its capital funding requirements through operating sources in order to provide for essential system replacements and improvements. These limitations are expected to become more severe as competition for decreasing federal capital funds becomes more intense.

Figure I-4

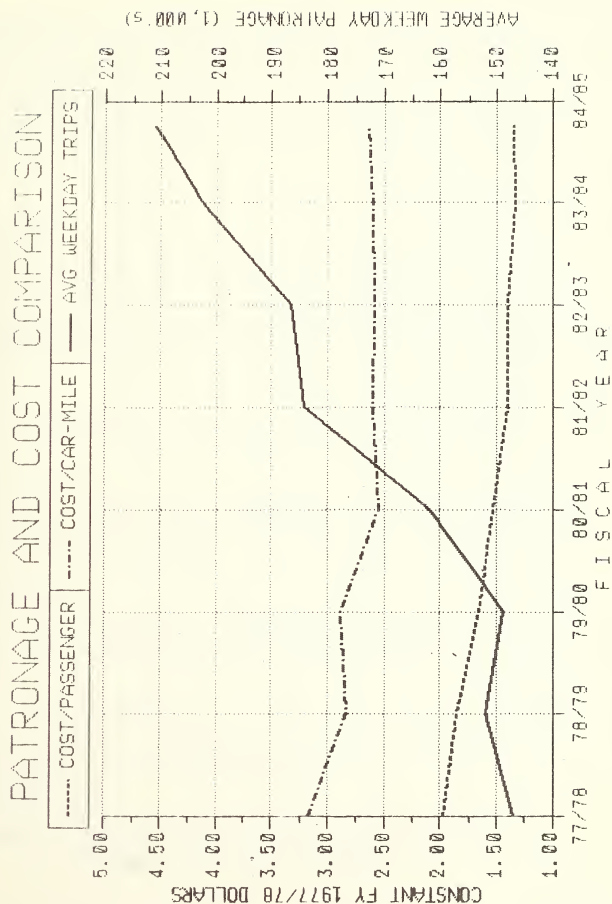
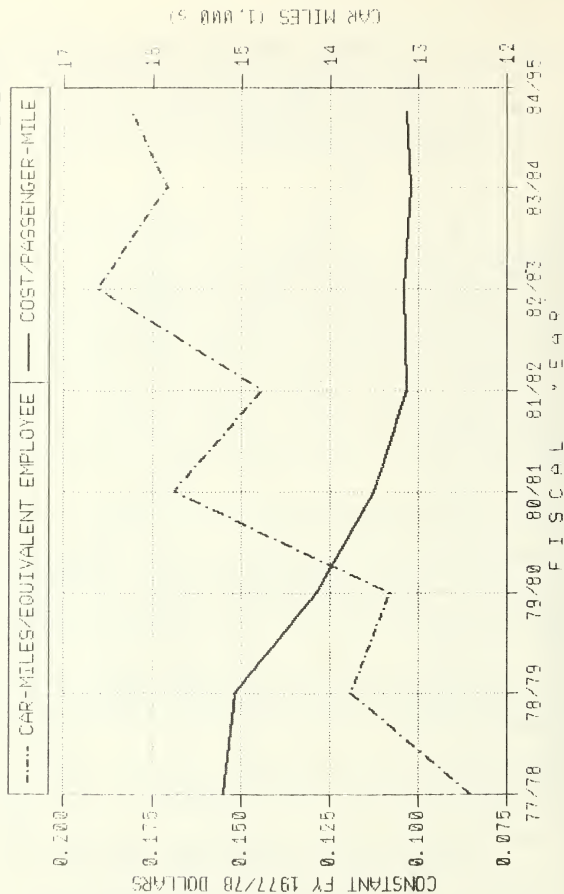


Figure I-5

SERVICE OUTPUT & COST COMPARISON



Continued pressure on the District's financial resources will further emphasize the need for efficient and effective operating strategies which incorporate innovative productivity measures into the overall approach. Further, key capital improvements which can enhance current operational efficiencies will need to be completed in order to realize long-term economies and increased productivity. Both the Daly City Turnback and Yard and the new C-cars will produce significant operational benefits and resulting cost savings. In the future, BART must exploit every possible operating efficiency in order to reduce cost pressures and minimize the size of necessary fare increases.

PROGRAM DELIVERY

Realizing BART's inherent economies of scale and latent capacity potential by the end of this planning period is a realistic but challenging objective. Based on the projections noted above, it seems reasonable to expect significant growth in ridership if capacity increases can be delivered in a timely manner. These capacity increases depend heavily on implementation of the District's Capital Improvement Program. The principal elements of the capital program have been well established for several years and include:

KE Track

The third downtown Oakland track (KE track) is required to increase capacity through the heavily travelled Oakland wye, where all four routes merge.

Vehicle Fire Hardening

The currently imposed CPUC subway vent separation requirement effectively limits scheduled San Francisco line headways to 3 minutes 30 seconds, or 17 trains per hour. The removal of this restriction is contingent upon the timely completion of the vehicle fire-hardening program.

New Revenue Vehicles

At least 150 new revenue vehicles will be needed to service anticipated patronage growth. The new C-car will permit expansion of existing consists which are less than 10 cars long, addition of new trains, as well as efficient on-line sizing of trains.

Central Train Control Computer

A new central train control computer will be required for operations exceeding the existing computer capacity limit of 49 on-line trains.

Electrification Upgrade

Operation of increased numbers of peak period trains at reduced headways will require additional power distribution facilities on the C-Line and in all three yards.

Daly City Turnback

Higher density train operations will require a more efficient and less time consuming train reversing facility at Daly City, where the minimum scheduled turnback time is now 3 minutes 30 seconds (versus a required minimum of 2 minutes 15 seconds).

New Vehicle Automatic Train Control System (ATC)

The existing ATC units on all A-cars represent the largest single cause of vehicle service disrupting failures on the system. The New Vehicle ATC system will substantially reduce ATC caused service disrupting failures. This system will be installed in all C-cars and will also be retrofitted into all existing A-cars.

Daly City Yard

A westbay storage facility will be needed to lay up vehicles not needed for midday operations. Layups at this yard will produce significant savings in power and vehicle maintenance costs.

M-87 Interlocking

Relocation of the turnout to track 3 at Daly City Station is needed to eliminate interference between a train berthing on that track and one being dispatched from track 1.

SPS Modifications

The recently completed System Performance Study has determined that a number of improvements will be necessary, in addition to those listed immediately above, to achieve BART's five-year capacity objectives while maintaining or enhancing service quality. Designated BART's Enhanced Transit System Installations (BETSI), this program will include the following key tasks:

- o Reconfiguration of track circuits by moving and adding blocks,
- o Resignaling of some parts of the system,
- o Modification of station approach markers,
- o Modification of SORS software to reduce time to initialize (reset) this system,
- o Enhancement of central computer control capabilities
- o Development of a delay reduction program
- o Enhancement of train operations simulation capability

Further, in order to attain the 2 1/4-minute headway objective, it will be necessary to analyze and develop brake rate modifications for approval by the CPUC.

Attainment of the increased capacity potential inherent in the BART system with the completion of these projects depends upon their joint implementation. Lacking one or more of these major components, the system will not be capable of performing at the required higher level of capacity. Estimated completion dates for these projects are highlighted in Figure I-1 above. The service expansion scenario described above depends completely on realization of these capacity enhancements as scheduled. Timely funding and effective project management are therefore essential to assure the delivery of these important capital improvements as scheduled. With appropriate qualification, the same kind of focus needs to be directed toward all significant District initiatives that either directly or indirectly affect the service provided to BART patrons.

EXTENSIONS

Extensions to the 71-mile basic system were thoroughly reviewed in the "New Starts and Extensions" hearings held by the Metropolitan Transportation Commission (MTC) in FY 1983/84 for the purpose of prioritizing these and other regional projects for future implementation. The resulting MTC New Starts and Extensions Program supports the four BART extensions which are in Phase I (Within Current Three-County District Priority) of the BART Extension Policy.

Acquisition of purchasable extension station sites is in progress. Interim usage of these acquired future rail station sites is being coordinated with the District's planned improvements to the Express Bus program to provide freeway-oriented, park/ride lots for the Express Bus operations.

MAINTENANCE REQUIREMENTS

In late 1976, BART implemented a new Maintenance and Engineering philosophy from which a new Maintenance Plan evolved. Basically, for the three maintenance divisions within the department, Engineering sets the criteria, Maintenance performs the work using Engineering provided documents, and Inspection, at predetermined times, ensures that Maintenance is performing to Engineering criteria. There is no appeal beyond Engineering. This tried and proven philosophy is to remain in effect during the current planning period.

A description of District maintenance departments, personnel, facilities, and a summary of BART's maintenance program are included in Appendix A.

EXPRESS BUS EFFECTIVENESS AND PRODUCTIVITY

Concern about the cost, relatively low farebox recovery ratio, and local service nature of BART Express Bus Service has led to a major reevaluation of this program. Efforts to upgrade the program began with the drafting of a revised scope of services which formed the basis for an amended contract signed during FY 1984/85. On-time performance standards and a farebox revenue objective were established. The reevaluation of service has sought to identify opportunities for reduction of scheduled travel times by shifting to more freeway-oriented operations.

ENERGY CONTINGENCY REQUIREMENTS

In the event of a significant gasoline shortage which would potentially divert large numbers of automobile commuters to the system, BART will not be able to expand peak period service until the new revenue vehicles now on order are delivered. All available BART rail vehicles are currently in service. A few additional vehicles will become available when the fire hardening program is completed by July 1986.

In view of this inability to expand capacity during the first year of the planning period, BART's response to a gasoline shortage will of necessity be comprised of the following types of activities:

- o Extension of peak period service beyond the current transition to offpeak service to accommodate commuters who can shift their normal working hours;
- o Provision of information about train loading patterns especially with reference to space available in non-peak directions for reverse commuting;
- o Potential consideration of higher peak period fares to shift non-essential trips to offpeak periods.

Each of these responses to a gasoline shortage condition could be implemented within a fairly short time interval. Energy contingency concerns are discussed further in Chapter II (see page II-46).

CAPITAL INVESTMENT PLANNING

For the past several years, BART has recognized the need to implement capacity expansion projects which will augment the inherent capability of the present system to transport commuters into the congested Central Business Districts of San Francisco and Oakland. This need to develop and finance a number of major capacity expansion projects has entailed a comprehensive capital investment planning effort. This work involves a determination of needs and/or problems to be resolved, identification of alternatives and evaluation of potential solutions. After selection of appropriate projects, funding strategies are developed to maximize state and local financial resources. Capital investment planning, following these guidelines, is an integral part of BART Short Range Transit Planning.

PRIVATE SECTOR PARTICIPATION

Although BART is a public agency, a considerable amount of its operating budget is spent on contracted provision of goods and services, mainly through private firms. There is growing recognition that private providers may have an important role in support of transit operations, especially as public financial support is diminished. Pressure on future operating budgets will require that alternative

sources of goods and services be considered. BART has already identified possible opportunities for private providers of selected feeder and/or Express Bus service and has established a notification process to ensure that such opportunities are communicated to private providers.

In addition, BART seeks to participate actively with the private sector in a joint development program as a means of financing access improvements (see pages II-47 to II-50).

DISADVANTAGED BUSINESS ENTERPRISE

All sectors of the economy merit an equal opportunity to participate in publicly financed endeavors. BART has specifically recognized this concern in setting its annually adopted performance objectives. One of the objectives guiding District contract bid evaluation is the degree of disadvantaged/women owned business participation in a given contract proposal. BART's performance through FY 1983/84 has approximated or exceeded the District's goals, and District management recognizes the need to maintain a strong resolve to provide an affirmative action contract environment.

SHORT RANGE TRANSIT PLANNING

BART was in the vanguard of transit systems which developed management-by-objectives processes, systematic performance monitoring and short-range planning efforts. This corporate philosophy continues to guide District management and policy makers. The District Quarterly Performance Report on System Objectives is keyed to the Program Area outline which structures the BART Short Range Transit Plan. In other words, the objectives which are developed in the planning process form a detailed checklist by which management performance is routinely monitored and publicly communicated to all interested persons. BART considers this process essential to sound management and effective delivery of responsive transit service.

The BART Short Range Plan includes an analysis of key factors which affect the management and operation of the system. Service planning is a major focus of this plan, as is the development of 5-year financial forecasts. Periodic fare structure adjustments are necessary to keep pace with inflation and provide new services as appropriate. In this regard, the planning process is essential to determine the magnitude of equitable fare increases necessary for the attainment of incremental revenue targets.

The BART Short Range Transit Plan also addresses improved efficiency of operation through the Productivity Improvement Program, and monitors Elderly and Handicapped services through the BART Access Program.

CHAPTER II

OPERATIONS AND CAPITAL
IMPROVEMENT PROGRAM

The preceding chapter outlined general considerations for this year's Short Range Transit Plan update. Future demand expectations were reassessed, highlighting the need for adequate capacity without compromising service quality. Important issues including cost effectiveness, productivity, and program delivery were also identified. The purpose of this chapter is to review recent District performance and to examine the outlook for the future.

The following discussion is presented by program area: the nine areas of District activity which respond to the Board adopted goals (see page iii). Following general introductory remarks which highlight past performance, the discussion is divided into four major sections within each program area. These are:

FY 1984/85 OBJECTIVE STATUS

A review of District performance for the first half of FY 1984/85 with respect to each of the Board adopted program area objectives.

FUTURE OUTLOOK

Based on an analysis of recent data and trends, an assessment of likely year-end performance is presented relative to each objective. Additional discussion focuses on likely performance beyond June 1985 and within the current 5-year planning horizon.

PLANNED IMPROVEMENTS

This section presents BART's strategy for assuring continued favorable performance. Specific projects and programs are highlighted in terms of future considerations.

PROGRAM AREA OBJECTIVES

This fourth and final section identifies revised program area objectives for the upcoming 1985/86 fiscal year and also for the four remaining years in the current planning timeframe.

Additionally, Figure II-14 which follows the program area discussion (beginning on page II-60), identifies all priority capital projects and summarizes each project's justification and implementation schedule.

PROGRAM AREA A: BASIC SYSTEM SERVICE AND CAPACITY

Provision of adequate capacity is the main thrust of District planning efforts, given the continued strong current growth of demand and projected increases in demand. The last major capacity addition was introduced with the phasing of close headways service during the summer of 1980, from 3- to 4-route Transbay service (with the addition of the Richmond/Daly City route). This improvement increased peak period on-line trains from 33 to 42, and on-line cars from 272 to 310. While scheduled peak hour Transbay capacity is 55.2% greater today, the growth in demand since 1980 kept peak hour train load factors virtually unchanged (1.40 then versus 1.36 presently). And with all available B-cars currently being used, higher load factors and constrained ridership levels are clearly in BART's future until additional capacity can be provided.

FY 1984/85 OBJECTIVE STATUS

As summarized in Table II-1 on page II-3, weekday service now calls for 43 on-line trains during peak periods, 39 for midday operations, and 14 for 2-route night service. Similarly, scheduled weekend service remains unchanged this year with 31 on-line trains required for Saturday daytime service and 14 on-line trains for Saturday night and all day Sunday service.

As of December 1984, BART's operating fleet consisted of 129 A's and 291 B's. Four a.m. pre-peak car availability averaged 104 A-cars and 263 B-cars for the July-December 6-month period (versus 106 and 261 A- and B-car availability objectives for the same period). This actual availability compares to service requirements (for afternoon peak period operations during December) of 102 A-cars and 259 B-cars and represents 79% and 89% of the operating A- and B-car fleet, respectively.

The availability objective of 106 A-cars was based on a companion objective which called for 2 additional peak period trains, one on each of the Concord and Fremont/Daly City routes (thus increasing the A-car requirement by 4, from 102 cars to 106). In November 1984, a decision was made not to increase peak period on-line trains from 43 to 45. Since 43-train service already requires all available B-cars, the net capacity increase with the two additional trains would only be 4 cars (i. e., the 4 A-cars; the B-cars for these new trains were to come from already scheduled consists). The 2 additional peak period trains called for in the FY 1984/85 objective will be placed in service following the completion of the Fire Hardening program in July 1986. During FY 1985/86, the A-car service requirement will remain at 102 cars.

Actual peak period Transbay capacity averaged 97.8% of scheduled trains and 96.5% of scheduled cars. This is slightly below BART's throughput objectives of 98.0% for trains and 97.5% for cars.

Based on representative data, systemwide load factors for the first half of FY 1984/85 averaged 1.44 for peak hour operations, 1.22 for the balance of the peak period, and 0.76 for offpeak service (versus an objective which calls for all maximum offpeak train load factors to average no greater than 1.05). These load factor averages, however, do not reveal the rather wide range of values recorded for individual routes. Peak hour load factors ranged from a high of 1.57 on the Fremont/Daly City route to a low of 1.19 on the Richmond/Fremont route, and individual train load factors were even higher. The current District objective for peak period operations calls for balancing load factors for discretionary trains (consists which can be lengthened or shortened within the 3- to 10-car limitation). For discretionary trains, peak period load factors for the July-December period averaged 1.26 for Concord/Daly City, 1.24 for both Fremont/Daly City and Richmond/Daly City, and 1.21 for Fremont/Richmond. The discretionary train load factor objective was attained since any shifting of cars off the Fremont/Richmond route would have resulted in excessively high load factors on the resulting shorter trains. The offpeak objective was virtually achieved: offpeak load factors on only two of 39 trains exceeded the 1.05 target during the October-December 1984 quarter.

Table II-1

SCHEDULED SYSTEM CAPACITY (As of December 1984)

	C O M M U T E				W E E K D A Y		S A T U R D A Y		S U N D A Y / H O L I D A Y	
	AM PEAK	MIDDAY	PM PEAK	NIGHT ^a	DAY	NIGHT	DAY	NIGHT	DAY	NIGHT
NUMBER OF TRAINS										
Concord/Daly City	14	10	14	7	8	7	7	7	7	7
Fremont/Daly City	10	10	10	b	8	b	b	b	b	b
Richmond/Daly City	9	9	9	b	7	b	b	b	b	b
Fremont/Richmond	10	10	10	7	8	7	7	7	7	7
Total On-Line	43	39	43	14	31	14	14	14	14	14
Spares	8	7	8	7	c	c	c	c	c	c
Total Required	51	46	51	21	c	c	c	c	c	c
NUMBER OF A-CARS										
Concord/Daly City	28	20	28	14	16	14	14	14	14	14
Fremont/Daly City	20	20	20	b	16	b	b	b	b	b
Richmond/Daly City	18	18	18	b	14	b	b	b	b	b
Fremont/Richmond	20	20	20	14	16	14	14	14	14	14
Total On-Line	86	78	86	28	62	28	28	28	28	28
Spares	16	14	16	14	c	c	c	c	c	c
Total Required	102	92	102	42	c	c	c	c	c	c
NUMBER OF B-CARS										
Concord/Daly City	106	32	106	40	20	16	16	11	40	11
Fremont/Daly City	69	22	65	b	19	b	b	b	b	b
Richmond/Daly City	42	15	44	b	14	b	b	b	b	b
Fremont/Richmond	18	10	20	8	8	7	7	7	11	7
Total On-Line	235	79	235	48	61	23	48	51	51	18
Spares	24	8	24	12	c	c	c	c	c	c
Total Required	259	87	259	60	c	c	c	c	c	c

a. Base service requirement without consideration of major special events which may require additional capacity.

b. No service on these routes during these times.

c. Spare requirements are a yard option for weekend service. A minimum of one train per yard is kept as a ready spare.

FUTURE OUTLOOK

With the exception of the objective to provide 2 additional peak period trains (now postponed until September 1986), it is anticipated that all of the objectives for this program area will be achieved by year's end. While this is a positive indication, the longer term outlook is for potential ridership growth beyond the District's ability to provide adequate capacity. This situation was underscored in Chapter I.

Current patronage has placed a premium on peak hour capacity, particularly on the Concord and Fremont/Daly City lines where all scheduled peak hour trains are already at their maximum 10-car limit. Over the past year, the reallocation of B-cars from the less travelled Fremont/Richmond route in response to increasing demand on the Richmond/Daly City route has resulted in higher and more balanced load factors for all 4 routes. The future outlook for reduced crowding (and the ability to accommodate higher patronage at desired load factors) will require additional peak hour capacity which can only be provided by additional cars and an increase in the number of on-line trains. The system is effectively functioning at maximum service levels presently, with no major capacity additions possible until the following limitations are resolved:

Route Merging and Mainline Capacity

The Oakland Wye is a critical merging zone on the system, where all four routes share common trackage. The potential delay impact of trains stalled within the wye can be severe and can affect operations on the entire system. The KE track will provide additional capacity and operational flexibility when completed in November 1985.

Removal of Subway Vent Separation Requirement

As a result of the January 1979 Transbay tube fire and subsequent investigation, BART is restricted to operating no more than one train between any two subway air vents. This is a precautionary measure imposed to minimize the risk of smoke from a train being drawn past other trains. The removal of this restriction is dependent upon completion of the vehicle fire-hardening program and approval from the California Public Utilities Commission (CPUC).

Additional Cars and Storage

Even if BART could operate at closer headways, the current car inventory of 136 A's and 303 B's would not permit scheduling additional capacity. The vehicle fire-hardening program (see Program Area C: Safety and Security, on page II-17) requires the removal of 5 A's and 11 B's until this project is completed in July 1986. This means the District will have a maximum of 109 A-cars and 261 B-cars to form online and ready spare trains (under current headway capabilities, however, only 102 A's can be used). Additional cars will be required, both to lengthen currently scheduled trains where possible and also to make up additional trains once headways can be reduced. The acquisition of new vehicles substantially in excess of the current fleet will require additional storage space. An important consideration which will need to be addressed is the determination of existing storage facility limitations and identification of any new facilities which will be required with fleet expansion. Similar considerations need to be given to maintenance of vehicles.

Central Train Control Computer

BART's existing train control computer is limited to supervising a maximum of 49 on-line trains and is approaching the end of its useful life. With future operations requiring up to 75 on-line trains at full 2 1/4-minute operation and more for system extensions, a new system capable of handling substantially more traffic will be required.

Insufficient Power Distribution Facilities

Planned future service levels will exceed the capacity of current power distribution facilities on the C-Line and in the three yards. Upgrades of these facilities are essential.

Terminal/Turnback Zone Configuration and Approach Speeds

With the exception of the Richmond terminal zone, those located at Concord, Fremont, and Daly City require trains to cross in front of one another in negotiating inbound and outbound movements. This, together with excessively slow speeds (as low as 3 miles per hour), increases the time required for reversing trains at the ends of each line. This situation is most critical at Daly City since this is the turnback point for the three Transbay routes and therefore reflects the highest service frequency on the system. Until recently, turnback parameters have limited operations to a 3 minute 45 second-headway which resulted in the current schedule of 16 trains per hour reversed at Daly City. A 3 minute 30 second-headway is now possible based on train control modifications to the existing track in the vicinity of Daly City completed last year which permit scheduling one additional train in the peak hour. Full utilization of this capability must await delivery of additional revenue vehicles. To reduce headways further will require a more efficient track configuration and signal protection to allow for improved train reversing.

A-Car Automatic Train Control System (ATC)

The ATC units on BART A-cars operate at an unacceptable reliability rate. The current ATC system comprises the principal cause of service disrupting failures of the BART vehicle. A headway of 2 minutes 30 seconds will not be possible using current ATC units. Second generation ATC units developed for the C-car will have an improvement of 25 to 1 and will replace current A-car ATC units.

Primary Train Detection

Uncertainty prior to the beginning of BART service about the primary train detection system's ability to recognize continuously all online trains led to the CPUC requirement for backup detection systems. The Computer Assisted Block System (CABS) was used initially. This was replaced by the backup system currently in effect, Sequential Occupancy Release System (SORS), which provides adequate detection but compromises the ability to operate trains on headways less than 3 minutes 30 seconds. Completion of the System Performance Study reveals that reconfiguration of the track detection circuits, resignalling, and modification of SORS software along with other enhancements will be needed to allow headways of 2 minutes 30 seconds.

Brake Rate Modifications

Another finding of the System Performance Study is that, to achieve the ultimate goal of 2 1/4-minute headways, some relaxation of braking parameters in signalling will be required, either by raising the signalling brake rate or reduction of other brake delay assumptions. This will involve safety studies and a request to the CPUC.

PLANNED IMPROVEMENTS

A description of proposed peak period service for the next five years is presented on page I-16, with peak period service defined by the number of trains on line by route and resulting headways in minutes. Current peak period service is shown as 43 on-line trains. With one exception, this essentially represents the maximum level of peak period capacity which can be provided between now and the end of 1986 when the phased delivery of the new C-cars begins to have a significant impact on the size of BART's vehicle fleet. Obviously, this will have a bearing on system load factors given the foregoing demand projections.

The exception noted above refers to the addition of 2 new peak period trains beginning in September 1986. These trains will consist of cars which become available upon completion of the fire-hardening project in July 1986. As a result of Fremont/Daly City having the highest average load factor during the peak hours, one train during this time period is to be added on this route. The second new train will be added to Concord/Daly City service just outside the peak hour, by extending the 7 minute 30 second-route headway further into the balance of the peak period.

The next significant addition of on-line capacity is scheduled to occur during the early part of 1987, when expansion of peak period service to 48 trains will be possible with the receipt of 48 C-cars by November 1986 and availability of the KE track.

The reduction of the minimum scheduled headway to 3 minutes 10 seconds and the start of 54-train service will be possible after the turnback portion of the Daly City project is completed by December 1987 and other important capital improvements are in place. These include vehicle fire hardening (providing the basis for CPUC removal of the vent separation requirement), central train control computer enhancement, and the delivery of the the balance of the new revenue vehicles.

Completion of the new on-board ATC units on all A-cars, the Daly City Yard and M-87 Interlocking, and other improvements identified by the System Performance Study, are expected to result in a further reduction of the minimum scheduled headway to 2 minutes 30 seconds and resulting expansion of on-line trains to 57. The changes recommended by the System Performance Study (beyond those improvements already described) include changes affecting wayside control, delay reduction, and operations, scheduling and central control. Although schedules have been developed for implementing these changes prior to the July 1989 target date assumed in Table I-4, this effort will be complex and difficult to implement in conjunction with the remaining BART capacity expansion program, and funding of the whole project is not yet assured.

The next service level anticipated after mid-1989 is a decrease in the scheduled minimum headway from 2 minutes 30 seconds to 2 minutes 15 seconds. This will require a change in the braking algorithm used for signalling and, ultimately, CPUC approval.

In order to implement the proposed service expansion scenario, several major projects must be completed. District efforts will, therefore, continue to focus on the timely implementation of already programmed essential capital projects which, when completed, will permit an 85% expansion of BART capacity as outlined above. In summary, these essential projects are:

KE Track

The new third track and related turnouts are to be operational by late 1986, adding increased operational flexibility and capacity for the Oakland wye, a critical route merging point on the system.

Vehicle Fire-Hardening

As a result of the January 1979 Transbay Tube Fire and subsequent investigation, BART is restricted to operating no more than one train between any two subway air vents per direction at any given time. This is a precautionary measure imposed to minimize the risk of smoke from a train being drawn past other trains. The removal of this restriction is anticipated following the completion of the District's fire-hardening program which is scheduled for completion by July 1986. Under this program, all vehicle wall and ceiling liners and floors are being reconstructed to reduce flammability and toxic smoke emissions. Until this project is completed, widely spaced vents located in the Berkeley Hills Tunnel and on the San Francisco line between Civic Center and 16th Street stations limit headways to approximately 3 minutes 30 seconds in San Francisco and 4 minutes 30 seconds on the Concord line.

New C-Cars

The analysis of BART capacity requirements on pages I-8 through I-20 indicates that additional vehicles are vitally necessary to meet projected ridership growth during the five-year planning period. As indicated, peak period service capacity cannot be significantly expanded until receipt of the new C-cars. To maintain maximum capacity, 85% A- and C-car and 90% B-car availability will be required along with train and car throughput of 98.0% and 97.5% respectively. Without the new C-cars, forecast patronage, if attained, will exceed system capacity, with load factors well above desired standards.

Enhanced Central Train Computer

The central train computer in conjunction with various supporting wayside equipment provides systemwide train supervision. The existing central computer is capable of monitoring the movement of up to 49 trains at any one time. Expansion of central control capabilities is needed to allow for on-line train operations exceeding this limit in early 1988. Current plans call for an enhancement of the existing system to be operational by late 1987. Once in place, the integrated control system (ICS) will allow BART to operate 75 on-line trains initially, with the capability of expanding the control system for operating 115 trains.

Electrical Capacity Increase

This project is designed to upgrade third rail power distribution. This will involve the installation of 2 new substations, 3 breaker stations, modification and upgrade of existing yard substations, and increase of yard feeder cable capacity. These improvements are planned for the C-line segment of the mainline and for all three yards, especially the Concord Yard.

The BART third rail electrification system is designed for Cam-controlled vehicles with constant current characteristics. The BART chopper-controlled vehicles have constant power characteristics. A constant power load increases maximum motor current requirements by 30% and generally requires 30% closer substation spacing for equal headway.

Studies by DeLeuw Cather and BART staff have determined that mainline equipment will support operation up to the 50-train level, however, voltage problems will exist on the C-line at the planned five-year service level. Yard equipment will support operation up to the 50-train level, but some equipment will be overloaded at the five-year service level.

Daly City Turnback/Storage Facility

Once currently scheduled consists reach the 10-car limitation, more on-line trains will be required to increase capacity. This need already exists on the Concord and Fremont/Daly City lines during peak hours with maximum available capacity essentially being provided and load factors continuing to increase as a result of persistent peak period patronage growth despite overcrowding. Due to current system constraints which limit minimum sustainable headways to 3 minutes 30 seconds, only one additional peak hour train can be operated until essential improvements are in place. The Daly City turnback is a critical element required for reducing headways significantly below current levels since it will provide a much more efficient terminal track configuration allowing for the achievement of service expansion as described on page I-10. An interim measure already completed permits the reduction of the minimum scheduled headway to 3 minutes 30 seconds through train control modifications in the vicinity of Daly City Station. This will facilitate the addition of one peak hour train when completion of fire hardening makes available additional vehicles.

New Vehicle Automatic Train Control System (ATC)

Current on-board ATC equipment represents the largest cause of service disruptions. The New Vehicle ATC system will substantially reduce ATC hardware failures and, through the use of built-in automatic operational redundancy, reduce ATC-caused service-disrupting failures by a factor of 25 to 1. This system will be installed in all new C-cars, and will also be retrofitted into existing A-cars.

M-87 Interlocking

As presently configured, the M-87 interlocking includes a crossover in front of the Daly City Station main platform (tracks 1 and 2), and a turnout, nearer the station, to track 3. This configuration results in interference between a train coming in to berth on track 3 and another being dispatched from track 1. By moving the turnout to track 3 beyond the crossover, such interference will be eliminated. This change will further enhance train movement flexibility in the vicinity of the Daly City Turnback.

BART's Enhanced Transit System Installations (BETSI)

The recently completed System Performance Study has determined that a number of improvements will be necessary, in addition to those listed above, to achieve BART's capacity objectives while maintaining or enhancing service quality. This program includes the following key tasks:

- o Reconfiguration of track circuits by moving and adding blocks,
- o Resignalling of some parts of the system,
- o Modification of station approach markers,
- o Modification of SORS software to reduce time to initialize (reset) the system,
- o Enhancement of central computer control capabilities,
- o Development of a delay reduction program,
- o Enhancement of train operations simulation capability.

Brake Rate Algorithm Modifications

As noted above, attainment of the 2 1/4-minute headway objective will require certain brake rate algorithm modifications based on thorough analyses, and CPUC approval. Schedules for this work remain to be developed. Likewise, a firm start date for this service level has not been determined.

Until capacity expansion projects are in place and service improvements started, the District will strive to improve performance within existing operational limitations. Priority capital projects in support of basic system service and capacity are summarized in Figure II-14 beginning on page I-60.

PROGRAM AREA OBJECTIVES

Revised operating performance objectives for the current five-year period are identified in Figure II-1 on the following page.

Figure II-1

BASIC SYSTEM SERVICE AND CAPACITY PERFORMANCE OBJECTIVES

FY 1985/86

1. Balance capacity where possible such that load factors for peak period trains which can be lengthened or shortened (consists between 3 and 10 cars) are relatively equal and provide offpeak service such that no train load factor exceeds 1.05.
2. Operate weekday peak period Transbay service in the peak direction providing at least 98.0% of scheduled train throughput and 97.5% of scheduled car throughput on a monthly average basis.
3. Make available 102 A-cars and 261 B-cars for revenue service by 4 a.m. (weekdays).

FY 1986/87 to FY 1989/90

1. Increase peak period capacity from 43 trains to 45 trains by adding one train each to the two most heavily travelled routes (Fremont/Daly City and Concord/ Daly City) by September 1986.
2. Operate 4-route weekday service with the capability of providing sustained 3 minute 10 second-headways by February 1988 following the completion of the Daly City Turnback reducing to 2 minutes 30 seconds by July 1989 following the completion of remaining capacity expansion projects.
3. Support the following weekday car requirements (as of the fourth quarter of each fiscal year):

<u>Service Requirements</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>
A-Cars	112	115	115	115
B-Cars	272	272	272	272
C-Cars	41	107	128	128
TOTAL	425	494	515	515
<u>Service Distribution</u>				
On-Line	385	437	453	453
Spares	40	57	62	62
TOTAL	425	494	515	515
<u>Total Fleet:</u>				
A-Cars	136	136	136	136
B-Cars	303	303	303	303
C-Cars	48	150	150	150
TOTAL	487	589	589	589

PROGRAM AREA B: RELIABILITY

Improved service quality has largely been responsible for increased BART patronage. Continued growth of BART ridership will depend heavily on the extent to which service quality can be maintained and improved further, in light of adding more trains on the system to increase capacity.

The reliability improvement program and BART's well established preventative maintenance program have greatly assisted in improving service quality dramatically over the past seven years. Whereas train on-time performance averaged well below 50% prior to FY 1978/79, today's level hovers between 94% and 95%. In the same time period, the percentage of scheduled train dispatches completed increased from 86% to 99%, while the rate for passenger offloads due to vehicle and wayside equipment was reduced by 11%.

FY 1984/85 OBJECTIVE STATUS

The percent of scheduled train dispatches completed averaged 98.9% for the July-December period. This level of performance is just under the 99% objective level.

Peak period train on-time performance averaged 93.7%, compared to an objective level of 93.0%. For daily operations, on time averaged 94.3% compared to 95% objective.

The percentage of patrons arriving at their destination stations within 5 minutes of scheduled train run times averaged 92.2% for the first half of the current fiscal year. This compares to a patron on-time objective of 94%.

The rate for primary delay events (causing peak period trains to be detained more than 7 minutes) averaged 2.42 events per 100 train runs during the first half of FY 1984/85 (versus an objective rate of no more than 2 events per 100 trains). As a result of the peak period delay events, 7.21% of all peak period train runs were detained more than 7 minutes. This compares to the current objective which calls for a maximum train delay rate of 6%. The impact of each delay event thus detained an average of 3.0 trains more than 7 minutes.

The District's offload objective is measured in terms of a 12-month average rate. As of December 1984, total offload incidents amounted to 1,755. This resulted in a total offload rate of 1.58 incidents per 1,000 car hours (versus an objective of 1.35 incidents per 1,000 hours).

Of the 1,755 total offloads for the current 12-month period, 1,177 (67.1%) were the result of vehicle equipment, 134 (7.6%) were wayside equipment related, and 444 (25.3%) were due to operational and miscellaneous causes. The resulting 12-month incident rates per 1,000 car hours for these offload categories are: 1.06 for vehicle equipment (relative to a 1.10 objective rate), 0.12 for wayside equipment (versus a 0.05 objective rate), and 0.40 for operational and miscellaneous causes (versus a 0.20 objective rate).

Performance for automatic fare collection equipment, as measured by the maintenance technician rate, averaged 0.30 incidents per 1,000 passenger trips during the July-December 1984 period. Current performance equals the District's AFC objective of 0.30 incidents per 1,000 trips.

Six AM availability for entry/exit gates averaged 95.7% (versus an objective of 95%). For ticket vendors, availability was 89.4% (versus a 90% objective).

The District's objective for station elevators is to maintain 6 AM availability no lower than 95%. During July-December 1984, elevator availability surpassed this objective, averaging 98.7%.

Performance for escalators also surpassed the District's 93% availability objective, with a current period average of 98.1% of all station units in service by 6 AM.

The terms of the purchase of service agreement between the District and AC Transit calls for the provision of 95% express bus on-time performance. Based on a 40% sample of all BART express bus runs during the October-December 1984 quarter (the first time this objective was monitored), 96.3% of the runs arrived at their final destination within 5 minutes of schedule.

FUTURE OUTLOOK

Based on favorable year-to-date performance, objective achievement is anticipated with regard to scheduled weekday train dispatches completed, peak period train on-time performance, vehicle offload rate, AFC maintenance technician rate, 6 AM availability rates for entry/exit gates, elevators, and escalators, express bus on-time performance, and 4 A.M. vehicle availability.

Given slightly improved performance during the second half of this fiscal year, objective achievement appears likely for daily train on-time performance, patron on-time performance, and 6 AM ticket vendor availability. Year-to-date performance for all these reliability indicators is within 2% of desired objective levels.

PLANNED IMPROVEMENTS

The major thrust in this area will be to continue to improve service quality further and at a minimum to maintain performance standards under higher density train operations. This will be done by the following:

- o Continued scrutiny of both rolling stock and wayside equipment as regards failure trends and reliability rates using the MARIS information system.
- o Further implementation of a time control system which will permit more maintenance to be scheduled and reduce unscheduled maintenance.
- o Installation of the second generation ATO on BART's current fleet of A-cars (C-cars will also contain this new equipment). The ATO system does not meet acceptable reliability and maintainability standards. The new ATO is expected to show an improvement of 25 to 1.

The District currently has 24 engineers dedicated to direct maintenance support. These consist of 12 engineers for revenue vehicle maintenance and 12 for wayside maintenance. Efforts are coordinated between these engineers and maintenance staff to solve problems, analyze failures, develop maintenance procedures, and implement modifications. The Engineering and Construction Department supports longer range maintenance activities by providing designs for projects as they are identified (i.e., C-cars, Daly City tail track/storage facility, etc.) and develops modifications of current equipment. Since 1976, BART has increased on-line trains by 30% and the number of car hours by 57%, but decreased total maintenance staff by 12%. Future increases in service, however, will require increases in maintenance personnel.

All maintenance staff participate in a comprehensive maintenance training program which includes certification following successful completion of required coursework. Additionally, maintenance staff are afforded the opportunity to advance their knowledge further through special training courses. A technical training staff of 16 people provides this service, in addition to general training courses provided by the District to enhance management's effectiveness.

Important capital improvement efforts in this area include installing new ATO units on all A-cars, and continuing to upgrade all vehicle traction motors. Other capital projects which address system reliability are identified in Figure II-14 beginning on page II-60.

PROGRAM AREA OBJECTIVES

Revised operating performance objectives for this program area are as identified in Figure II-2 on the following page.

Figure II-2

RELIABILITY PERFORMANCE OBJECTIVES

FY 1985/86

1. Complete 99% of all monthly scheduled dispatches.
2. Conduct operations such that on a monthly basis 95% of daily terminal-to-terminal runs are completed within 5 minutes of scheduled run times with at least 93% during AM and PM peak periods for commute days.
3. Provide service such that no more than 2% of peak period trains experience a primary delay exceeding 7 minutes and no more than 6% experience a delay from any cause exceeding 7 minutes.
4. Conduct operations such that on a quarterly basis, 94% of all patron trips are completed on-time. All patron trips are on-time when trains run not more than 5 minutes late or 60 seconds early.
5. Provide service such that passenger offload rates remain at or below the following: vehicle equipment = 1.10; wayside equipment = 0.05; operations and other = 0.20; and the total = 1.35.
6. Maintain the overall AFC technician maintenance incident rate at or below 0.30 incidents per 1,000 passenger trips, and maintain or exceed a 6 AM average weekday availability rate of 95% for entry/exit gates and 90% for ticket vendors.
7. Maintain a 6 AM average weekday availability of 95% for elevators and 93% for escalators.
8. Maintain express bus ontime performance such that 95% of all runs arrive at their final destination within 5 minutes of schedule.

FY 1986/87 to FY 1989/90

1. At a minimum, maintain current reliability objective level performance under higher density train operations pending additional improvements which may be identified by the System Performance Study.

PROGRAM AREA C: SAFETY AND SECURITY

Patron safety has always been of paramount concern to the District. As such, facilities and operations planning are performed in concert with BART's Safety Department to assure adherence to accepted industrywide safety standards. Numerous improvements have been made in BART's 12-year operating history in addition to the safety features included in the system's original design. These include modifications to vehicles, stations, right-of-way protection, and parking areas which have been implemented as a result of recommendations based on intensive and ongoing analyses of accident data. Further, the experience of the 1979 Transbay Tube fire and follow-up investigation provided BART and the entire transit industry with greater insight regarding emergency preparedness and life safety. The recommendations of this investigation were incorporated into an aggressive program to improve the safety of facilities and operations even further, which included the replacement of all vehicle seat cushions and covers with low-smoke/flame-resistant material.

Numerous other safety improvements were implemented in accordance with the investigation's recommendations. Equally as important has been the publication of an extensive and detailed emergency plan for BART which was developed in cooperation with local emergency service agencies. This has led to improved communications coordination and a better understanding of the BART system on the part of local fire departments and other emergency service providers. BART facility tours and drills are conducted on an on-going basis to assure that emergency response capabilities are maximized for critical kinds of situations at all system locations.

The District's annual patron accident rate has declined because patronage has increased more rapidly than the number of patron accidents. The number of annual passengers between FY 1978/79 and FY 1983/84, for example, grew by 41.5%, whereas the number of patron accidents increased at a much lower 9.8%. The resulting annual accident rate per million passengers thus declined 22.3%, from 22.0 to 17.1 during this five-year period.

The establishment of BART Police Services prior to the start-up of revenue operations in September 1972 was an early recognition of the District's special security requirements. Patron security has subsequently been emphasized throughout BART's planning and operational history.

Compared to many older rail transit systems, serious crimes against patrons have remained at a relatively low level. Since the latter part of 1981, BART's 12-month average patron related crime rate excluding disorderly conduct has fluctuated between 9 and 11 incidents per million passenger trips. In contrast to this is the rate for disorderly conduct which has increased substantially during the same 3-year period. As of June 1981, the 12-month rate for disorderly conduct stood at 5.3 incidents per million passenger trips. The following June, this rate increased to 5.5, then 8.4 in June 1983, and 13.8 incidents per million passengers in June 1984. In part, this increase reflects passage of State legislation which empowered transit district police officers to issue citations for certain offenses included under disorderly conduct. The increase in the 12-month rate for disorderly conduct pushed the rate for all patron-related crimes up 24.3% in three years, from 18.5 incidents per million passenger trips in June 1981 to 23.0 in June 1984.

This program area also focuses on the safety and security of BART employees. Discussion of this consideration is included in the following sections.

FY 1984/85 OBJECTIVE STATUS

Performance relating to patron safety is favorable as indicated by the patron accident rate which was 10.2% lower than the stated objective. As of December 1984, the 12-month average accident rate was 15.9 incidents per million trips (versus an objective of 17.7). Actual incidents increased 0.8%, from 944 accidents during calendar year 1983 to 952 in 1984. For the current number of annual incidents, 758 (79.6%) occurred within stations with the remaining 194 (20.4%) accidents related to train operations. Since revenue service began in September 1972, BART has carried 470.6 million patrons 6.2 billion passenger miles without a single patron fatality.

Total incidents of patron-related crime increased 22.1%, from 1,145 during 1983 to 1,398 in 1984. Increases are recorded for murder (up from 0 last year to 2 this year), assault/battery (up from 264 to 319), sex offenses other than rape (up from 67 to 90), and disorderly conduct (up from 602 to 856). Decreases this year relative to 1983 are recorded for rape (down from 9 to 4), robbery (down from 131 to 97), arson (down from 20 to 8), and purse snatching (down from 52 to 22).

BART's patron-related crime objective for FY 1984/85 calls for a 12-month rate no higher than 18.5 incidents per million passenger trips. On this basis, the District's patron-related crime rate for the 12-month period ending December 1984 is 23.4 incidents per million trips, 13.6% above the 20.6 annual rate reported for 1983. The current annual rate is based on 1,398 patron-related crimes, 856 (61.2%) of which are for disorderly conduct and 542 (38.8%) for all other categories listed above. The resulting annual rates per million passenger trips for disorderly conduct and all other patron-related crimes are 14.3 and 9.1, respectively.

Employee lost time injuries during July-December 1984 resulted in a loss of 0.60% of all hours worked. This compares to a lost-time objective of no more than 0.50%.

One of BART's safety objectives for FY 1984/85 is to conduct at least one emergency procedures/safety session each month with representatives of local fire departments and other emergency service providers. During the first half of the current fiscal year, BART conducted 14 of these sessions which involved 467 fire department representatives. These sessions include: 6 system familiarization tours, 3 smoke movement drills, 3 water hose laying drills, 1 track inspection tour, and 1 emergency procedures training exercise.

Other activities in the area of patron safety include the implementation of a Platform Edge Detection Project which is designed to improve safety for vision impaired patrons. The platform edges at Berkeley, Montgomery, and Rockridge Stations have been grooved and re-filled with a slightly raised material for easier edge recognition. A follow-up six-month testing period will serve as the basis for evaluating the effectiveness of the new edge and its potential for implementation at other BART stations.

FUTURE OUTLOOK

Patron accidents have held fairly steady over the last four years, fluctuating between a low of 852 (12-month incidents) to a high of 1,003. As of December 1984, current 12-month incidents are 952. Given this relatively flat profile versus steadily increasing patronage, BART's 12-month patron accident rate is expected to remain favorable relative to the current year's objective of 17.7 accidents per million passenger trips.

BART's patron-related crime rate is currently substantially higher than the desired objective. The upward trend for the 12-month average rate which began in early 1982

is expected to continue primarily in response to increased incidents of disorderly conduct (as discussed in the previous section). Incidents of disorderly conduct constituted 61.2% of all patron-related crimes in 1984, up from 41.2% and 52.6% in 1982 and 1983, respectively. Adding incidents of assault/battery brings this figure to 84.0% of all patron related crime. District efforts will, therefore, need to focus on improving police deployment strategies so that increased visibility and other surveillance methods may deter these as well as more serious crimes against BART patrons and employees.

The District's employee lost-time rate is currently 20% above the desired objective level of 0.50% of all hours worked. More favorable performance in prior years indicates that this objective could be achieved by year's end given diligent efforts in the second half of FY 1984/85. Future efforts will need to continue to enhance the District's job training program to maintain favorable performance in this area.

It is anticipated that the District's emergency preparedness/safety session objective will be achieved this year. BART's Safety Department is involved in an intensive on-going program with local emergency service providers for the purpose of maximizing response capabilities to events on the system.

Completion of important emergency preparedness and life safety improvements which will permit BART to operate safely under higher density train operations is essential. Providing a new Daly City turnback, ICS, C-cars, and other capacity projects alone will not permit the operation of closer headway service. A critical element is the removal of the currently imposed CPUC subway vent separation requirement. This can only come about through the completion of the District's vehicle fire-hardening program (programmed for completion in July 1986) followed by timely CPUC authorization to eliminate the vent separation requirement.

PLANNED IMPROVEMENTS

Efforts in the area of safety and security will continue to concentrate on minimizing incidents of patron-related crime and accidents for both patrons and employees.

The effective deployment of BART police will be the prime strategy for combating crime on trains, in station areas, and along track rights-of-way. Computer programs for tracking and dispatching police officers will continue to be used, as well as other information systems for the accurate and timely reporting of crime data.

In the area of patron safety and property protection, efforts will continue to focus on the District's comprehensive emergency preparedness and life safety program in order to minimize the risks to BART's growing ridership. Expansion of system capacity will require the removal of the CPUC imposed subway vent separation requirement so that trains may operate closer together throughout the system. The completion of the vehicle fire hardening program, currently estimated for July 1986, is an important project for improving fire safety and a prerequisite for eliminating this capacity restraint. Under this project, all vehicle floors will be improved and ceiling liners will be replaced to reduce flammability and toxic smoke emissions.

In addition to vehicle safety improvements are those for wayside facilities required for improving passenger safety and property protection. To date, wayside safety projects in excess of \$3 million have been identified based on recommendations contained in the Gage Babcock Wayside Safety Study (completed in June 1982) and those of the District Wayside Task Force, which is composed of BART safety staff, representatives of Gage Babcock consultants, local fire departments, and others. These projects fall into four categories of improvements: critical life safety, important life safety, primary property protection, and less important property protection.

An additional project is the Regional Rail Transit Emergency Training Program which will involve approximately 4,500 participants from BART and local fire departments. This program will provide classroom instruction, simulated emergency drills, and other techniques for the purpose of improving emergency preparedness and response times.

The completion of these safety improvements by 1987 and others soon to be identified will provide increased levels of safety and emergency preparedness. This will permit BART to operate closer headway service while maintaining stringent safety standards. Capital projects addressing improved BART safety and security are identified in Figure II-14 beginning on page II-60.

PROGRAM AREA OBJECTIVES

Updated operating performance objectives for safety and security are identified in Figure II-3 below.

Figure II-3	
SAFETY AND SECURITY PERFORMANCE OBJECTIVES	
<u>FY 1985/86</u>	
1.	Provide sufficient police coverage such that the rate of patron-related crimes does not exceed 9.5 per million passengers for disorderly conduct and 9.0 per million for all others.
2.	Continue to provide an environment for patron circulation through trains and stations such that the accident rate does not exceed 17.7 per million passengers.
3.	Reduce the total annual amount of employee lost time due to injuries as a percent of time worked to 0.50% or less.
4.	Conduct a minimum of one emergency plan exercise per month involving emergency response agencies.
<u>FY 1986/87 to 1989/90</u>	
1.	Maintain a rate of patron-related crime below those for District communities and other transit systems in the Bay Area and in other metropolitan areas.

PROGRAM AREA D: PATRONAGE AND TRAVEL PROMOTION

Use of the BART system has increased steadily over the years, and prospects for continued growth are excellent. Ridership growth has averaged over 5.9% annually for the past 10 years, including the impact of three fare increases. During the past year, patronage grew by 7.0% annually, not including the effect of increased BART/MUNI Fast Pass usage. And growth at the current service level has averaged 6.3% annually since FY 1980/81, not including extra Fast Pass travel. (A comprehensive discussion of potential demand appears in Chapter I.)

Ridership surveys indicate that BART patrons are representative of the areawide population generally, and are not confined to any one socio-economic bracket.

Commuting to work and work related travel comprise over 70% of BART trips. But use of BART for non-work purposes, especially shopping and access to entertainment facilities, is on the upswing.

The commuter market, in particular that portion which involves Transbay trips, is expected to remain a good source of new BART trips. San Francisco and Oakland CBD employment growth is expected to continue. Traffic congestion on the San Francisco-Oakland Bay Bridge is significant, and parking in the City is either expensive or hard to find.

The 1983 BART Latent Demand Survey documents a potential commuter market several times the current level of work trips on the system. For the above reasons, and given the District's commitment to a strong offpeak marketing campaign, future demand is projected to reach 293,000 by FY 1989/90.

FY 1984/85 OBJECTIVE STATUS

With the majority of peak period trains operating above a 1.30 load factor in the peak direction, offpeak and reverse commute travel continue to be the primary targets for BART promotional efforts. Activities during the July-December 1984 period were coordinated with major Bay Area events including the Democratic National Convention held at San Francisco Moscone Center, A's baseball games at the Oakland Coliseum, the Oakland Symphony at the Paramount Theatre, and the Christmas Dicken's Faire at the Fox Theatre in downtown Oakland.

Special holiday activities which took place in downtown San Francisco and Oakland also served as focal points for promoting additional offpeak BART ridership. To accommodate travel to many of the events, longer than normally scheduled trains were provided. A key element to this holiday season's promotional campaign is the additional Sunday service which was provided by "Shopper's Special" trains as discussed below. The publication of a Christmas edition of BART Times (a passenger newsletter available at all stations) provided patrons with the schedules for the "Shopper's Specials." In support of this service, shopping bags with the legend "Shopping Made Easy by BART" were handed out as a promotional item at selected stations to underscore BART's shopping theme.

A new Bay Area Transit Retail Directory was also handed out to patrons at selected stations. This directory, which is published by a private firm, includes a listing of retail, entertainment, restaurant, hotel, and service establishments located within walking distance of each BART station.

For the second consecutive year, BART provided direct Transbay service on the Richmond and Fremont lines on each Sunday between Thanksgiving and Christmas. Four "Shopper's Specials" departed both Richmond and Fremont terminal stations at 40-minute intervals between 9:15 and 11:30 AM destined for San Francisco/Daly City. Direct Transbay service back along the Richmond and Fremont lines was timed to retail store closings with these eight special trains (four on each route) departing Daly City between 4:45 and 6:00 PM. Operation of the "Shopper's Specials" was in addition to regularly scheduled 20-minute interval Sunday service on the Concord/Daly City and Richmond/Fremont routes. The eight "Shopper's Special" trains averaged 2,602 trips on each of the five Sundays they were in operation. This is 23% higher than last year's average of 2,116 trips for the same special service. This favorable patron response assisted BART in achieving above forecast Sunday ridership as discussed below. Representative station volumes for weekdays, Saturdays, and Sundays are summarized on the following page. The current status of BART ridership records is presented on page II-21.

Figure II-2

JULY-DECEMBER 1984

REPRESENTATIVE BART STATION PATRONAGE

(Presented in Descending Order by Weekday Ridership)

<u>BART Station</u>	<u>Weekday</u>	<u>Saturday</u>	<u>Sunday</u>
* Embarcadero	24,000	6,100	3,800
* Montgomery Street	24,000	5,000	2,500
* Powell Street	16,400	11,100	5,400
* Civic Center	11,600	4,500	3,500
Daly City	9,200	3,500	2,100
Berkeley	8,100	5,000	2,900
12th Street Oakland	7,400	3,500	2,600
* Balboa Park	7,200	3,300	1,200
19th Street Oakland	7,100	2,100	1,100
Concord	7,000	2,500	1,600
* 24th Street Mission	6,400	2,800	1,600
Fremont	5,200	2,800	2,000
Pleasant Hill	5,000	1,000	700
Walnut Creek	4,900	1,700	1,100
* 16th Street Mission	4,800	2,000	1,200
Fruitvale	4,600	2,200	1,300
Hayward	4,500	2,000	1,200
El Cerrito Del Norte	4,400	1,700	1,000
Bay Fair	4,300	2,100	1,200
* Glen Park	4,100	1,500	900
Coliseum	3,600	1,700	1,400
Oakland West	3,500	900	600
Union City	3,400	1,200	800
MacArthur	3,300	1,600	1,100
San Leandro	3,300	1,400	700
Rockridge	3,200	1,300	1,000
Lake Merritt	3,200	1,100	500
El Cerrito Plaza	2,800	1,000	600
Lafayette	2,700	700	500
Richmond	2,500	1,300	800
South Hayward	2,500	900	600
Ashby	2,300	1,400	900
Orinda	2,300	600	400
North Berkeley	2,200	1,000	600
Totals	211,000	82,500	49,400

* Includes BART trips made with BART/MUNI Fast Pass

Table II-3

BART PATRONAGE RECORDS*
As of December 31, 1984

<u>HIGHEST DAYS</u>	
Monday, July 16, 1984	235,244
Tuesday, July 17, 1984	229,055
Wednesday, July 18, 1984	234,794
Thursday, July 19, 1984	221,911
Friday, July 13, 1984	221,554
Saturday, November 17, 1984	101,940
Sunday, July 15, 1984	77,434
<u>HIGHEST MONTHLY WEEKDAY AVERAGE</u>	
July 1984	212,402
<u>HIGHEST WEEKLY AVERAGE (Weekdays Only)</u>	
July 16-20, 1984	226,989
<u>HIGHEST MONTHLY TOTAL TRIPS</u>	
October 1984	5,362,804
<u>HIGHEST 12-MONTH TOTAL TRIPS</u>	
November 1983 through October 1984	59,842,661

* All current patronage records were set during the period July-December 1984.

Total ridership of 30,197,406 for the first 6 months of FY 1984/85 is 1.8% above a forecast of 29,683,300, and 5.2% above the 28,706,406 trips for the same period a year earlier. This year's figure includes 2,666,668 trips via the BART/MUNI Fast Pass, a 15.9% increase for Fast Pass BART travel relative to July-December 1983. This substantial increase is due, in part, to the monthly Fast Pass price reduction from \$24 to \$20 which took effect in October 1984. Currently, nearly 1 out of 10 BART patrons accesses the system with a Fast Pass.

Average weekday ridership increased 5.3% from an average of 199,857 for July-December 1983 to 210,494 for the same period in 1984. The current average is 1.4% above a forecast of 207,661 average weekday trips. Of note, is the systemwide weekday average of 214,072 for the four full weeks between Thanksgiving and Christmas (compared to a record calendar month weekday average of 212,402 recorded for July 1984 at which time San Francisco hosted the Democratic National Convention). For similar reasons as cited above, year-to-date average weekday Fast Pass usage increased 15.8%, from 16,344 during July-December 1983 to 18,932 currently.

Year-to-date ridership for the four peak hours increased 1.4% from 102,464 last year to 103,884. The current average is 1.7% below a forecast of 105,670 peak period trips. Weekday offpeak patronage increased 9.5%, from 97,394 for the first 6 months last fiscal year to 106,611. The current average is 4.5% above a year-to-date forecast of 102,005 weekday offpeak trips, relative to the District's 3% marketing objective for additional (above forecast) offpeak system usage.

Year-to-date Saturday ridership averaged 85,322 trips, 8.9% above last year's average for the same period of 78,335. The current average is 3.0% above a year-to-date Saturday forecast of 82,815, equalling the 3% above forecast marketing objective. Average Saturday BART/MUNI Fast Pass usage increased 16.5%, from 5,603 trips during July-December 1983 to 6,530 currently. High BART usage to the Cal-Stanford football game on November 17, 1984 assisted in setting a new Saturday ridership record of 101,940 trips compared to a previous record of 95,735.

Year-to-date Sunday ridership increased 13.8% relative to July-December 1983. The current average is 50,414 Sunday trips, up from a year-to-date average last year of 44,317. The current average is 6.1% above a forecast of 47,530, thus surpassing the District's 3% marketing objective for Sunday system usage. For the Sundays between Thanksgiving and Christmas, when the "Shopper's Special" trains were provided, Sunday ridership averaged 52,693 trips. This is 9.2% higher than the 48,260 average recorded for the Sunday's during the 1983 holiday season. Average Sunday BART/MUNI Fast Pass trips increased 24.0%, from 2,635 during July-December 1983 to 3,267 for the current 6-month period.

Monthly surveys for the first 6 months of this fiscal year indicates 89.8% of all station area facilities are at or above the standards established for cleanliness. This is just under the 90% cleanliness objective and is up from 85.2% for July-December 1983.

The complete BART operating fleet is cleaned and inspected nightly. Criteria for monitoring and reporting cleanliness on a quantitative basis is currently under development. The District's objective for train cleanliness is to maintain a minimum of 90% acceptability.

Patron complaints regarding public contact employees totalled 259 during July-December 1984, 2.4% above the 253 complaints received during the same 6 month period last year. Increased ridership, however, offset this slight gain such that the year-to-date patron complaint rate regarding public contact employees declined from 8.81 complaints per million passenger trips last year to 8.58 currently. This compares favorably to a District objective rate of no higher than 8.75 complaints per million trips.

The District's objective for on-board service announcements is to achieve a 95% rating based on the Passenger Services Sampling Survey. Ratings are derived by weighting the percentages which reflect the on-board service announcements actually made versus those required (announcements are for arrival stations, transfer points, delays of 1-5 minutes, and delays more than 5 minutes). Because this survey is conducted on an annual basis each May, current year-to-date data are not available. The rating based on the May 1984 Passenger Services Sampling Survey was 89.2%, down from 92.9% in May 1983.

FUTURE OUTLOOK

It is anticipated that all of the FY 1984/85 ridership objectives will be achieved by year's end. Weakest performance is for "4-hour weekday peak" BART travel which is currently running 1.7% below forecast. Year-to-date performance with respect to all other ridership objectives is either at or above forecast. It is also anticipated that Patronage and Travel Promotion objectives for station cleanliness and patron complaints regarding public contact employees will be achieved this year. The unavailability of data for train cleanliness and on-board service announcements precludes presenting an assessment of performance at this time for these two remaining objectives in this program area.

The Passenger Profile Survey, which is to be conducted in May 1985, will provide an updated information base to assist the District in identifying other improvements to make BART service more convenient and attractive.

In conjunction with the Passenger Profile Survey, marketing efforts to be initiated during the latter part of the current fiscal year will focus on repositioning BART as a system which can serve shoppers. This strategy will be carried forth into the upcoming 1985/86 fiscal year in order to increase offpeak BART ridership.

Future BART ridership projections are thoroughly documented in Chapter I above. In order to maximize offpeak and reverse commute system usage, BART will need to implement a more comprehensive and aggressive marketing program. Support for this should include the provision for maintaining standards for system cleanliness, public contact employee courtesy and helpfulness, and train and station announcement accuracy. The patronage forecast is summarized in Table I-10. These estimates include normal growth at current capacity and fares, the increased ridership response to the District's marketing program, and peak period increases due to service expansion.

PLANNED IMPROVEMENTS

The realization of BART demand forecasts is greatly dependent upon the District's ability to provide an acceptable quantity and quality of service at a given fare level. Within its 12-year operating history, the District has made very substantial improvements in both service capacity and quality while minimizing the

impacts of required fare increases. And, as patronage records reveal, public response has been very favorable with sharp increases in ridership occurring with each major service improvement.

As highway congestion continues to increase and automobile operating costs rise, demand for BART service will expand. To maintain high quality service under these conditions will require the timely implementation of essential capital improvements identified in this plan.

Until substantial increases can be provided for peak period capacity in the primary demand direction, promotional efforts will continue to focus on attracting additional offpeak and reverse commute ridership. Strategies will build upon the information base established by the Passenger Profile and Latent Demand Surveys. Efforts in the area of patronage and travel promotion will subsequently focus on realizing demand forecasts through programmed service improvements and effective marketing strategies focusing on specific market segments, such as BART travel for shopping purposes. This includes the introduction of additional inter-operator passes, improved system signage and transit information, and innovative ways to improve transfers between BART and other transit systems. Additionally, train and station area cleanliness, public contact employee helpfulness and courtesy, and service announcement accuracy will be continually monitored to assure acceptable performance is also being achieved.

Capital projects which are in support of achieving increased ridership, and realizing a greater portion of BART's potential, are identified in Figure II-14 beginning on page II-60.

PROGRAM AREA OBJECTIVES

Revised operating performance objectives for this program are identified in Figure II-4 on the following page.

PROGRAM AREA OBJECTIVES

Revised operating performance objectives for this program are identified in Figure II-4 below.

Figure II-4

PATRONAGE AND TRAVEL PROMOTION PERFORMANCE OBJECTIVES

FY 1985/86

1. At a minimum, achieve normal growth projections for average daily patronage as follows (in 1,000's) at current fares:

	<u>Jul-Sep</u>	<u>Oct-Dec</u>	<u>Jan-Mar</u>	<u>Apr-Jun</u>	<u>FY 1985/86</u>
Average Weekday:	220.6	221.8	209.3	213.3	216.2
4-hour Peak:	111.7	113.7	111.5	111.5	112.1
Offpeak:	108.9	108.1	97.8	101.8	104.1
Saturday:	86.3	84.1	81.6	84.9	84.2
Sunday:	51.3	48.0	46.9	48.2	48.4

2. In addition to the above, actively promote offpeak ridership to achieve a 3% increase in travel as follows (1,000's).

	<u>Jul-Sep</u>	<u>Oct-Dec</u>	<u>Jan-Mar</u>	<u>Apr-Jun</u>	<u>FY 1984/85</u>
Weekday:	3.3	3.2	2.9	3.1	3.1
Saturday:	2.6	2.5	2.4	2.5	2.5
Sunday:	1.5	1.4	1.4	1.4	1.5

3. Continue sampling procedure to evaluate train and station area cleanliness, and maintain train and station cleanliness at or above an evaluation rating of 90%.
4. Continue concern for customer relations among public contact personnel such that the rate of patron complaints about this issue remains below 8.75 per million trips.
5. Continue public announcement procedures and practices such that the rating for four categories of announcements in the Passenger Services Sampling Survey averages at least 95%.

FY 1986/87 to FY 1989/90

1. Maintain acceptable quality of service as reflected by accuracy of service announcements, employee helpfulness, and station cleanliness in support of achieving the following patronage levels at planned fares (in 000's):

	<u>FY 86/87</u>	<u>FY 87/88</u>	<u>FY 88/89</u>	<u>FY 89/90</u>
Average Weekday:	216.7	232.5	248.0	253.7
4-hour Peak:	111.0	120.1	131.8	136.0
Offpeak:	105.7	112.4	116.2	117.7
Saturday:	85.6	89.8	91.9	93.3
Sunday:	48.7	50.6	51.3	51.6

PROGRAM AREA E: FINANCIAL AND OPERATIONAL EFFICIENCY

As discussed in Chapter I (see page I-24), cost effectiveness and productivity are integral to overall financial performance and the economies of providing expanded levels of service. Continuous monitoring of expenses for all phases of operations and capital project development, in conjunction with stringent budgetary controls, have enhanced District financial performance. Additionally, improved management information systems have permitted the District to respond more quickly to changing operational requirements.

These efforts to improve BART productivity have, in real terms, resulted in declining costs per passenger, per passenger mile, and per vehicle mile over the past five and one-half years. This is shown by the constant dollar comparisons on pages I-25 and I-26. At the same time, BART patronage and vehicle miles per equivalent employee have risen. This is solid evidence of BART productivity. Additional gains in the future may be harder to attain, thus management efforts should be focused on strategies to hold the line on expense, and to evaluate new ways of allocating resources in light of potential revenue returns. BART's 1985 Productivity Improvement Program reflects this concern, as will be discussed below.

The availability of key financial and operational performance data is an essential element required for effective management and decision making in order to realize greater levels of efficiency. Timely and accurate information reporting has thus played a vital role in evaluating BART performance and identifying specific areas requiring improvement. In addition to the annual Short Range Transit Plan, seven regularly published reports serve as important sources of financial and operational information. These are as follows:

Monthly Patronage Report: Presentation of BART ridership data for calendar and budget periods, relative to forecast. Other data include passenger miles, average fares, and average trip distance.

Budget Performance Report: Documentation of monthly and year-to-date expenses, revenues, and financial assistance for operations relative to adopted budget.

Quarterly Financial Statements: Documentation of District assets, liabilities, capitalization, financial operating results, and debt service funds.

Quarterly Performance Report on System Objectives: Status of District operating performance objectives, priority capital projects, and program area highlights.

Quarterly Operations Performance Report: Detailed documentation of operations performance with emphasis on reliability.

Quarterly Affirmative Action Report: Documentation of progress toward achieving the District's workforce representation and Minority Business Participation objectives.

Annual Report: Highlights of each fiscal year, including those for operations, capital improvements, and year-end financial statements.

In support of making these documents available in a timely manner, BART is continuing to upgrade its management information systems in order to provide improved data storage, manipulation, and reporting capabilities. The improvements made to date address a wide range of District concerns including financial, train operations, inventory control, labor, and crime reporting.

FY 1984/85 OBJECTIVE STATUS

Six financial and operational efficiency objectives were adopted by the District Board of Directors for FY 1984/85. In addition to these are other objectives which have been identified as part of the District's FY 1984/85 Productivity Improvement Program. Status for the PIP objectives is summarized in Figure II-5 on page II-28.

Favorable financial performance was recorded for the first six months of FY 1984/85. With total ridership 1.7% above forecast, passenger revenue was favorable relative to budget by 0.6%. Other operating revenue (primarily from interest and advertising income) was 11.4% above budget. Total revenue for the District during the July-December 1984 period was 1.7% above budget.

Operating expense also was favorable relative to budget. Below-budget labor and nonlabor expense resulted in total operating expense 4.4% below budget for the first half of FY 1984/85.

With rail operating expense 5.1% below budget, rail cost per passenger mile was 17.0¢ during July-December 1984, 6.1% under the annual budget forecast of 18.1¢ for this fiscal year.

During the July-December 1984 period, rail passenger revenue covered 49.4% of rail operating expense versus a rail farebox ratio objective of 47.4%. The systemwide farebox ratio, which includes expense and revenue associated with contract bus service (BART express bus, shuttle bus service, and AC Transit feeder service), is 47.1% compared to an objective of no less than 45.6%. The farebox ratio for BART express bus operations alone, is 17.3% compared to an objective of 14.2%. The systemwide operating ratio is 52.6%.

Underlying BART's favorable financial performance are productivity achievements for system utilization, employee output, and sick leave usage. System utilization (or the ratio of passenger miles to seat miles) is currently 35.6%, surpassing the objective level of 35.2%. The number of vehicle miles per equivalent employee is significantly above the 14,835 objective, at 16,387. Employee sick leave use is at a 3.42% rate, favorable relative to a 3.50% objective.

Data continues to be collected and evaluated as part of the District's ongoing performance monitoring and assessment efforts. Key documents have been prepared and transmitted to the District Board of Directors, Department Managers, and other appropriate staff and outside agencies. Availability of the documents relative to the FY 1984/85 reporting objectives is summarized in Figure II-6 below.

Figure II-5

STATUS FOR BART'S 1984 PRODUCTIVITY IMPROVEMENT PROGRAM OBJECTIVES
(As of December 1984)

PIP ELEMENT	OBJECTIVE	JUL-DEC 84 STATUS		COMMENTS																				
Comprehensive Marketing Program (Short-Term Program)	-Rail operating cost per passenger mile (18.0¢) -Systemwide farebox ratio (45.5%) -Passenger revenue per seat-mile (3.2¢) -Number of offsite ticket sales outlets (200) -Operating cost per passenger revenue for offsite ticket outlets (4.6%)	17.0¢ 47.1% 3.0¢ 131 Bank and 64 Other 195 Total Offsite Outlets 6.0%		Substantial growth of "extra" BART/MUNI Fast Pass trips, for which BART does not receive full fare value, contributes to lower than anticipated performance.																				
New Service FY 1984/85 (Short-Term Program)	-Ratio of passenger miles to seat miles (36.2%) -Patron on-time performance (94%) -Add one Fremont/Daly City train during the peak hour and one Concord/Daly City train in the balance of the peak period by October 1984 -Provide 1,210 additional parking spaces at South Hayward (199), El Cerrito del Norte (514), Concord (295), and Bayfair (204)	35.6% 92.2% No trains added No spaces provided		The decision to not add these 2 trains was made in November 1984 based on the very marginal new capacity these trains would provide relative to their operational impact on current service. Construction contracts for these projects are to be let prior to the end of FY 1984/85.																				
Capacity Expansion Program (Long-Term Program)	Targeted project completion dates and milestones for the following projects: -Primary Train Detection Study (July 1984), complete study by July 1984 -System Performance Study (July 1984), complete study by July 1984 -New Vehicle ATC (January 1985), prototype delivery by September 1984 -KE Track (November 1985), begin installation of train control by February 1985 -Fire Hardening (December 1985), complete 280 cars by June 1985 -ICS (June 1986), complete component testing by June 1985 -Daly City Turnback (May 1987), design complete by September 1984 -C-Cars (June 1987), prototype delivery by April 1985 -Daly City Yard (December 1987), design complete by December 1984	Scheduled Completion: <table><tr><th>Total Project</th><th>Milestone</th></tr><tr><td>Sep 1984</td><td>Sep 1984</td></tr><tr><td>Sep 1984</td><td>Sep 1984</td></tr><tr><td>May 1987</td><td>Jan 1985</td></tr><tr><td>Nov 1985</td><td>Feb 1985</td></tr><tr><td>Jul 1986</td><td>Dec 1985</td></tr><tr><td>Dec 1987</td><td>Apr 1986</td></tr><tr><td>Dec 1987</td><td>Feb 1985</td></tr><tr><td>May 1987</td><td>Jan 1985</td></tr><tr><td>May 1988</td><td>Feb 1985</td></tr></table>		Total Project	Milestone	Sep 1984	Sep 1984	Sep 1984	Sep 1984	May 1987	Jan 1985	Nov 1985	Feb 1985	Jul 1986	Dec 1985	Dec 1987	Apr 1986	Dec 1987	Feb 1985	May 1987	Jan 1985	May 1988	Feb 1985	Study Complete Study Complete Completion of ICS component testing has been included in the software production phase of this project.
Total Project	Milestone																							
Sep 1984	Sep 1984																							
Sep 1984	Sep 1984																							
May 1987	Jan 1985																							
Nov 1985	Feb 1985																							
Jul 1986	Dec 1985																							
Dec 1987	Apr 1986																							
Dec 1987	Feb 1985																							
May 1987	Jan 1985																							
May 1988	Feb 1985																							

Figure II-6

KEY PERFORMANCE REPORT AVAILABILITY

Report Title	Period Covered	Issue Date	Objective Date	Variance (Working Days)
Monthly Patronage Report	Jun 84	Jul 16	Jul 16	0
	Jul 84	Aug 14	Aug 14	0
	Aug 84	Sep 17	Sep 17	0
	Sep 84	Oct 12	Oct 12	0
	Oct 84	Nov 16	Nov 15	+1
	Nov 84	Dec 14	Dec 14	0
Budget Performance Report	Jun 84	Jul 30	Jul 23	+5
	Jul 84	Aug 10	Aug 17	-5
	Aug 84	Sep 10	Sep 17	-5
	Sep 84	Oct 12	Oct 19	-5
	Oct 84	Nov 9	Nov 19	-5
	Nov 84	Dec 7	Dec 14	-5
Quarterly Financial Statements	Apr-Jun 84	Aug 31	Aug 6	+19
	Jul-Sep 84	Oct 29	Nov 2	-4
Quarterly Performance Report on System Objectives	Apr-Jun 84	Sep 7	Aug 20	+13
	Jul-Sep 84	Nov 29	Nov 19	+6
Quarterly Operations Performance Report	Apr-Jun 84	Sep 7	Sep 4	+3
	Jul-Sep 84	Dec 15	Dec 5	0
Quarterly Affirmative Action Report	Apr-Jun 84	Aug 9	Jul 23	+13
	Jul-Sep 84	Nov 2	Oct 19	+10
Annual Report	FY 1983/84	NA	Oct 16	---

Other financial and operational efficiency highlights include a 42.2% increase in the number of off-site ticket sales outlets from 45 as of the end of the previous fiscal year to 64 currently. These outlets are in addition to the 131 bank branches which sell high value and discount BART tickets. BART off-site ticket outlets handled 10.6% of total ticket sales based on year-to-date cash receipts. The higher face value of the discounted tickets, however, resulted in these outlets accounting for 14.5% of gross passenger revenue (i.e., full-fare value of tickets sold).

FUTURE OUTLOOK

If year-to-date financial performance also characterizes second half results, both the rail and Express Bus farebox ratio objectives will be achieved this year.

Employee productivity has been favorable as measured by vehicle miles per equivalent employee. Year-end performance is expected to surpass this objective. Since vehicle miles are not expected to increase significantly over the next two years, continued favorable performance will depend on limiting District workforce expansion.

It appears likely that the 35.2% system utilization objective will be achieved. The three-car minimum consist constraint, in addition to other factors which govern train sizing, currently precludes the District from achieving significantly higher system utilization. Relatively small improvement is expected over the next three years. However, much better performance is anticipated with the completion of currently programmed capital projects as outlined in the "Planned Improvements" section below.

The employee paid sick leave rate for the first half of FY 1984/85 is just below the 3.50% objective. Continued efforts to control sick leave usage for the remainder of this year should result in the achievement of this objective for the year.

Efforts will continue to make essential documents available to both management and the District Board of Directors within the desired reporting periods. Additional enhancements to BART's management information systems should assist in meeting desired schedules.

PLANNED IMPROVEMENTS

Improved financial performance during the current SRTP timeframe is to be realized through stringent budget controls in concert with implementation of strategies to increase productivity. In support of this effort will be the timely availability of key financial and operations reports which permit BART management and the Board of Directors to be responsive to District needs and opportunities. Simultaneous improvements already noted in such areas as reliability, service delivery (throughput), and financial effectiveness attest to the gains BART has made in its 12 year operating history. Additional gains are anticipated this coming year and in subsequent years through the implementation of the District's annually revised Productivity Improvement Program. This program contains projects to be completed in the upcoming year and in the remaining four years of the 1985 SRTP timeframe which will result in even more favorable levels of cost-effectiveness, cost efficiency, and service-effectiveness while maintaining BART's high service quality. (Refer to Figure II-5 for a summary of status for projects included in BART's Productivity Improvement Program for FY 1984/85).

FY 1985/86 Productivity Improvement Program

BART's 1985 Productivity Improvement Program includes short- and long-term components, each of which contains several elements.

In the short term, BART will continue to implement its comprehensive marketing program during FY 1985/86 which will focus on increasing offpeak and reverse commute ridership and improved bus/rail service coordination with AC Transit. This program will include targeting "shoppers" as a key offpeak travel market, an expanded range of co-sponsored events held at facilities served by BART including but not limited to the Oakland Coliseum and San Francisco Moscone Center, improved system signing, and a prototype passenger information center to be installed at Oakland City Center-12th Street Station. The program also includes the continued expansion of BART's offsite ticket sales outlets and the possible introduction of bank serviced automatic teller machines (under the "Tickets-To-Go Program). Long term productivity gains focus on the implementation of BART's Capacity Expansion Program which is summarized in Table I-4 on page I-10. A complete description of BART's FY 1985/86 Productivity Improvement Program is included in Appendix B.

PROGRAM AREA OBJECTIVES

Updated operating performance objectives for this program area are identified in Figure II-7 below.

Figure II-7

FINANCIAL AND OPERATIONAL EFFICIENCY PERFORMANCE OBJECTIVES

FY 1985/86

1. Maintain a funded budget and farebox ratio of no less than 48.0% including 17.1% for BART express bus operations and 51.4% for rail operations.
2. Maintain a rail cost per passenger mile of 18.8¢ or less.
3. Achieve a level of service output such that 15,054 vehicle miles are produced per equivalent District employee (based on 2,000 hours worked, including overtime and excluding capitalized labor).
4. Improve system utilization (passenger miles per seat mile) to 36.5% through continued monitoring of train capacity to match passenger demand patterns.
5. Maintain a paid sick leave rate of no more than 3.5% (9.1 paid days) annually per employee.
6. Transmit key performance reports to the Board of Directors, Department Managers, and/or other recipients within the following number of working days after the close of each reporting period: Monthly Patronage Report (10), Monthly Budget Performance Report and Quarterly Affirmative Action Report (15), Quarterly Financial Statements (25), Quarterly Performance Report on System Objectives (35), Quarterly Operations Performance Report (45), and the Annual Report (75).

FY 1986/87 to FY 1989/90

1. Continue to provide cost-effective and efficient service through the achievement of key financial and operational efficiency objectives.

PROGRAM AREA F: AFFIRMATIVE ACTION

The purpose of the District's Affirmative Action Program is to formalize efforts to provide equal employment opportunity to all qualified persons, including minority/ethnic groups and women, and to assure that minority business enterprises are afforded the maximum practical opportunities to participate in the performance of all District contracts. The intent of the program is also to improve methods of resolving equal employment opportunity problems in accordance with federal and state legislation. The overall goals of BART's affirmative action program are to:

- o To use Affirmative Action to achieve a District workforce at all job levels in which minorities and women are represented in proportion to their representation in the population of the BART District.
- o Increase opportunities for participation of minority business enterprise in District contracting.

BART's Affirmative Action Plan (adopted by the District Board of Directors in June 1983) includes programs to achieve 3-year workforce representation objectives for women and minorities. The objectives were developed based on population characteristics for the three-county District per the 1980 U.S. Census and address representation within 15 job groups. An important element of the Plan is a job training program to promote the upward mobility of women, including placement within nontraditional jobs and for minorities in all job classifications. Also included in the plan are a targeting process and an intensified community outreach program for the purpose of improving the availability of information regarding employment opportunities at BART.

BART's Minority Business Enterprise Program (adopted by the District Board of Directors in February 1984) includes procedures to attain practical participation goals for disadvantaged- and women-owned businesses in all District contracts over the next fiscal year.

Title VI

In compliance with Title VI (Civil Rights Act of 1964), BART submits to UMTA an assessment of rolling stock characteristics and distribution, a service area demographic profile, and service accessibility to specific minority and nonminority communities. A full assessment is submitted every 10 years based on most recent Census data. Interim updates are prepared annually reflecting service and/or fare revisions.

The District's 1983 submittal was based on 1980 census data which was used to prepare a profile of the service area including: population, median family income, civilian labor force, population trends, and automobile ownership. Profiles were prepared for both minority and nonminority populations as well as the total service area population.

A sample of 1,636 trip destinations were utilized in an analysis of travel time and costs for minority and nonminority analysis zones (based on Census tracts). Seven trip categories are included in the analysis. These are: employment, shopping, hospitals, social services, judicial courts, education, and central business district (includes downtown San Francisco and Oakland only).

Based on 1980 data, the total population for BART's service area is 2,539,385. This represents a population increase of 4.2% since 1970. Contra Costa County population increased 17.6%, the highest gain for all BART's counties.

The minority population represents 37.8% of BART's total service area. The breakdown by minority group is: Black 14.2%, Asian 11.6%, Hispanic 11.3%, and Native American 0.7%. Since 1970, the greatest population increases were 89.3% for Asian and 64.5% for Native American. Black population increased 18.8% with a 2.9% increase for Hispanics.

The total civilian labor force for BART's service area is 1,296,241. Minority labor force representation is: Black 11.8%, Asian 11.7%, Hispanic 10.3%, and Native American 0.4%.

Median income for BART's service area is \$21,355. Minority group median income is: Asian \$23,897, Hispanic \$19,972, Native American \$17,948, and Black \$14,954. Median income for Blacks residing in San Francisco is \$14,269, the lowest minority median income for all counties, while Asians in Contra Costa County have the highest minority median income at \$28,778.

The percent of service area households without an automobile is 18.3%. The Black population has the highest percentage of households without an automobile at 30.5% followed by 22.6% for Asians, 21.4% for Native Americans, and 18.9% for Hispanics.

The most important part of the Title VI assessment is the measurement of travel times and travel costs from a sample of analysis zones which are characterized as predominately minority and nonminority. UMTA establishes travel time standards for specific trip categories (the first six previously listed above). Accessibility is then assessed based on whether selected trips can be made within the accepted standards.

An analysis of accessibility within BART's service area was performed with respect to two sets of transit networks: all transit including BART, and all transit not including BART. The analysis focused on the relative effectiveness of each transit network in accommodating travel between minority/nonminority analysis zones and selected trip destinations (corresponding to the UMTA categories plus trips to downtown San Francisco and Oakland).

The results of this analysis in terms of accessibility and costs are summarized in Table II-4 on the following page.

TABLE II-4

TITLE VI: ACCESSIBILITY AND FARE ANALYSIS

STANDARD TRIP CATEGORY (PURPOSE)	PERCENT OF ALL DESTINATIONS ACCESSIBLE WITHIN STANDARD TIME*		AVERAGE FARE (\$) **	
	MINORITY	NONMINORITY	MINORITY	NONMINORITY
Employment	40.8	41.6	0.60	0.52
Shopping	40.8	27.8	0.54	0.57
Hospitals	33.0	33.0	0.54	0.54
Social Services	18.4	25.3	0.50	0.50
Judicial Courts	40.3	16.7	0.56	0.50
Education	47.6	33.1	0.58	0.55
SF/OAK CBD	63.5	47.3	0.72	0.81

* Established by UMTA guidelines.

** Average fares reflect the fare schedule in effect during 1980.

FY 1984/85 OBJECTIVE STATUS

As of December 31, 1984, BART's work force consisted of 2,201 full-time/active employees, of which 499 (22.7%) are women and 1,081 (49.1%) are minority. The District's FY 1984/85 achieving the June 1986 representation objectives for the specific job categories identified in BART's 1983 Affirmative Action Plan. The table on the following page summarizes the 1986 objectives and the District's work force representation as of the end of December 1984 and the end of the last fiscal year.

The District awarded a total of \$23,832,427 in contracts during the July-December 1984 period of which \$4,410,552 (18.5%) were for goods and services provided by minority and female-owned businesses. This compares to the District's 21% objective for MBE participation based on total contracts.

Year-to-date as of February 28, 1985, federally assisted contracts executed by BART amounted to \$15,658,903. Of this total, \$376,856 (2.4%) were associated with women business enterprise (versus a 3% objective.) An additional \$405,927 (2.5%) of the federally assisted contract amount were for disadvantaged business enterprise (versus a DBE objective of 18%).

Figure II-8

**PROGRESS TOWARDS ACHIEVING BART'S 1983
AFFIRMATIVE ACTION PLAN OBJECTIVES FOR 1986**

AFFIRMATIVE ACTION GROUP AND JOB CATEGORY	PERCENT REPRESENTATION AS OF:		JUNE 1986
	JUNE 1984	DECEMBER 1984	OBJECTIVE
WOMEN			
Executives & Managers	6.0	6.1	10.0
Supervisors/Others	7.4	3.9	6.0
Foreworkers/Transportation	10.5	9.2	12.0
Foreworkers/Other	2.7	3.4	9.0
Engineers	5.8	5.9	10.0
Professionals	42.6	43.7	39.0
Transportation Workers - T/O	24.2	24.9	27.0
Skilled Workers	4.6	4.3	9.0
Semiskilled Workers	21.0	21.1	27.0
Protective Services	18.5	20.3	17.0
Supervisors/Police	8.0	7.7	20.0
HISPANIC			
Supervisor/Transportation	10.3	10.3	11.0
Supervisor/Other	4.4	4.6	6.0
Foreworker/Transportation	11.9	12.3	13.0
Engineer	1.9	2.0	5.0
Professionals	7.0	7.1	8.0
Supervisor/Police	4.0	3.9	11.0
ASIAN			
Executives & Managers	4.0	4.1	6.0
Supervisors/Transportation	6.9	6.9	7.0
Foreworkers/Transportation	4.5	4.6	5.0
Foreworkers/Other	9.5	9.0	10.0
NATIVE AMERICAN			
Executives & Managers	0.0	0.0	1.0
Supervisors/Other	0.0	0.0	1.0
Foreworkers/Transportation	0.0	1.5	1.0
BLACK			
Supervisors/Transportation	13.8	17.2	16.0
Supervisors/Other	10.3	10.8	11.0
Skilled Workers	16.1	16.6	17.0

FUTURE OUTLOOK

Workforce representation for women and other minority groups has improved within recent years with regard to overall percentages and distribution by job group. An overall assessment of progress to date is underway to assure that maximum efforts are extended on the remaining timetable towards the realization of Affirmative Action objectives, as set forth in the June 1983 Plan.

As of February 28, 1985, MBE participation for total contracts is currently within 9 percentage points of being attained. Achievement of this objective will require diligent efforts during the second half of FY 1984/85.

PLANNED IMPROVEMENTS

Progress towards achieving workforce representation objectives is addressed in the District's Affirmative Action Plan which includes 13 major activities, all of which have been initiated.

PROGRAM AREA OBJECTIVES

Objectives for this program area are identified in Figure II-9 below.

Figure II-9

AFFIRMATIVE ACTION PERFORMANCE OBJECTIVES

FY 1985/86

1. Achieve workforce representation objectives for women and minorities in accordance with the 1983 Affirmative Action Plan.
2. Encourage efforts to achieve 21% minority business enterprise participation for all District contracts determined to have MBE opportunities, with 18% DBE and 3% WBE participation for federally assisted contracts.

FY 1986/87 to FY 1989/90

1. Seek to achieve District objectives for workforce representation of minorities and women and for minority business enterprise contract activities.

PROGRAM AREA G: SYSTEM ACCESS

The original BART plan envisioned a major coordination effort and restructuring of local transit routes to provide high levels of access to rail stations. With 113,600 average weekday trips and 17,262 automobile spaces provided when Transbay service began in September 1974, BART parking facilities then averaged a 79% noontime occupancy. December 1984 weekday ridership averaged just over 208,000 trips with 5,723 more parking spaces provided now than in 1974. Despite these additional spaces, systemwide average noontime occupancy has risen to 95%.

BART patron access needs in outlying suburban areas are difficult to serve by transit, as past experience has shown. Consequently, the automobile is the most widely used and effective means for travel to BART in these areas. As shown in Table II-5 on page II-38 the District now provides 22,985 automobile spaces at 24 stations, or 33.2% more than when Transbay service began. And, at a 95% average noontime occupancy, lack of parking is a definite deterrent to many of those who use the system and for others who would if parking space were available.

Past efforts have included the implementation of innovative alternatives to parking, including: special shuttles, exclusive bus lanes in the immediate vicinity of stations, improved bus waiting areas, interoperator transfers and passes, bicycle racks and lockers, and a car-pool program. All of these have met with varying degrees of success, depending upon their location. The periodic Passenger Profile and Latent Demand Surveys have provided detailed access information for both users and nonusers of the system. This information has been utilized to update BART's Access Plan. Further, numerous improvements designed for the special needs of the elderly and handicapped have been implemented over the years (in addition to those originally incorporated into the system), making BART a viable form of transportation for mobility impaired persons. This includes BART Express Buses which are accessible to persons in wheelchairs. As identified under Extension Service and Capacity on page II-50, the District's Express Bus Program provides service between key BART stations and travel corridors within the District presently not served by rail.

FY 1984/85 OBJECTIVE STATUS

Two system access objectives were adopted by the District Board of Directors for FY 1984/85 in support of BART's Access Implementation Program. These relate to improving both auto and transit access to stations.

The first objective calls for the addition of 1,190 BART-owned parking spaces at existing rail stations by June 1985. This objective was based on station parking lot redesign projects for South Hayward (213 additional spaces), El Cerrito del Norte (557 spaces), Concord (193 spaces), and Lafayette (227 spaces). Following the adoption of the 1984 SRTP by the District Board of Directors in June 1984, the number of spaces to be added at each station were revised and the parking lot redesign project at Bayfair Station was substituted for Lafayette. The project at this latter station is now programmed for implementation during FY 1986/87. Current plans call for adding 1,210 parking spaces at 4 stations: Bayfair (293 spaces), South Hayward (199 spaces), Concord (204 spaces), and El Cerrito del Norte (514 spaces). It is anticipated that construction for these projects will be underway prior to the end of FY 1984/85, with their completion expected by November 1985.

Table II-5

BART PARKING SPACE INVENTORY
(As of December 1984)

CONCORD LINE:		
	Concord	1,771
	Pleasant Hill	1,652
	Walnut Creek	1,263
	Lafayette	1,096
	Orinda	1,096
	Rockridge	776
	SUBTOTAL	7,654
RICHMOND LINE:		
	Richmond	754
	El Cerrito del Norte	1,079
	El Cerrito Plaza	509
	North Berkeley	524
	Ashby	560
	MacArthur	585
	SUBTOTAL	4,011
FREMONT LINE:		
	Fremont	1,525
	Union City	1,166
	South Hayward	890
	Hayward	967
	Bayfair	1,468
	San Leandro	1,066
	Coliseum	923
	Fruitvale	787
	Lake Merritt	190
	SUBTOTAL	8,982
SAN FRANCISCO LINE:		
	Daly City	1,877
	Glen Park	58
	Oakland West	403
	SUBTOTAL	2,338
SYSTEM GRAND TOTAL		22,985

An additional 503 parking spaces were provided starting in October 1984 under a program which called for the removal of restricted curbside no-parking zones at nine Eastbay stations. With these additions, the District currently provides 22,985 parking spaces systemwide. The table on page II-38 summarizes BART's parking space inventory by station and line segment.

A second system access objective which was adopted by the District Board of Directors for FY 1984/85 is to implement full schedule coordination between BART and AC Transit by June 1985. In October 1984 the General Managers of BART and AC Transit signed a purchase of service agreement in which BART is to provide \$11.2 million during FY 1984/85 in exchange for the continuation of night service on 11 bus routes connecting directly to BART stations (previously to be eliminated by AC due to budget constraints), the start up of 9 new offpeak bus routes providing a direct link to the BART system, as well as the continuation of AC operated BART Express Bus service.

Bus schedules for the routes covered under this agreement have been adjusted to minimize the waiting time for patrons transferring from a BART train. In conjunction with this coordination effort, new two-part transfers are now available at Eastbay BART stations served by AC Transit. These transfers provide a fare discount on connecting AC Transit service both away from and to BART stations. The one-way adult fare with the new transfer is 45¢ during peak hours (6 AM - 9 AM and 4 PM - 7 PM on weekdays) and 25¢ at all other times (versus a full fare of 60¢ without the transfer). Fares for students and persons eligible for regional transit fare discount card are 20¢ and 10¢, respectively, at all times of the day. By December 1984, it is estimated that 35% of the AC/BART schedule coordination objectives has been achieved.

Increased ridership which was expected to result from this coordination effort, has not been realized to date. Ridership for the restructured AC bus routes (excluding BART Express Bus) has declined and the District is currently in the process of renegotiating a second annual contract with AC Transit in an effort to improve the service and its cost-effectiveness to both operators.

In contrast to the declining ridership with respect to the above AC bus routes, is the very successful coordination effort for the BART/MUNI joint pass which became available in April 1983. Average weekday BART Fast Pass trips have more than doubled since April 1983, from just under 12,000 then to 25,000 as of March 1985 (quarterly averages for BART/MUNI Fast Pass use since start-up are presented in Table II-6 on page II-40). Progress with respect to expanding this joint monthly pass concept to include AC Transit (Super Pass) includes the development and evaluation of alternatives by the Multi-Operator Pass/Transfer Project Technical Advisory Committee. Selection of a preferred alternative is expected to take place during the Spring 1985. Both Fast Pass and 20-Ticket Books are also being evaluated with respect to improving transfers to BART Express Buses (see Extension Service and Capacity, page II-54).

Other system access highlights for the first half of FY 1984/85 include City of Oakland concurrence for a parking lot redesign project at Fruitvale Station. Funding for this project has not become available, however. Construction of the Transfer Information Center at Concord Station began in September 1984 with a planned completion by April 1985. Efforts to enhance access to the BART system for mobility impaired persons continued through the District's Task Force on Access for Elderly and Handicapped Persons. Recent efforts of the Task Force, which includes residents of the three-county District, have focused on three primary areas:

Table II-6
BART/MUNI FAST PASS USE
QUARTERLY AVERAGES SINCE START-UP

	<u>Total Trips</u>	<u>Average Weekday</u>	<u>Average Saturday</u>	<u>Average Sunday</u>
Apr-Jun 1983	942,929	13,325	4,491	2,265
Jul-Sep 1983	1,078,848	15,215	5,215	2,387
Oct-Dec 1983	1,221,632	17,509	5,964	2,904
Jan-Mar 1984	1,279,123	18,180	6,540	2,984
Apr-Jun 1984	1,263,240	17,760	6,295	3,022
Jul-Sep 1984	1,225,981	17,340	5,649	2,953
Oct-Dec 1984	1,440,707	20,605	7,479	3,606

- o Administrative changes to the Bay Region Discount Card Program,
- o Elevator Improvement Program,
- o Platform Edge Project.

Implementation of the above three projects has been initiated with gear-up for issuing new discount cards (planned for March 1985), elevator improvements underway, and installation of platform edging at Montgomery, Berkeley, and Rockridge stations (for additional details with respect to this latter project, see Safety and Security, page II-16).

FUTURE OUTLOOK

The 1983 BART Latent Demand Study indicates that the current potential market for typical home to work travel is approximately 462,000 people. This population includes all persons who reside within 3 miles of a BART station and commute 5 miles or more to a workplace which is also served by BART. The results of this and other studies indicate that system access is clearly a growing problem. Access deficiencies are expected to become even more acute as patronage demand continues to increase in response to service expansion phasing over the next five years.

As noted in Chapter I (see page I-2), with no significant highway expansion programmed and existing facilities at or near capacity currently, BART, with its capacity expansion program, is essentially the only regional transportation facility which will be capable of accommodating substantially higher travel demand in the coming decade. This is particularly true for Transbay travel and other critical highway linkages such as the Caldecott Tunnel. These facilities are at capacity during most of the day with their delay impacts extending to all proximate highways. This increasing level of highway congestion along with very limited downtown parking, is expected to result in more and more people looking toward BART as a way of satisfying their travel needs. How these additional people will get to BART is the central focus of the District's Access Implementation Program.

The most pressing need in the coming years will be to alleviate BART's growing parking deficiency, estimated by 1988 to be on the order of 15,800 spaces above the current 23,000 space inventory. This deficiency translates into an estimated \$7.2 million annual net revenue loss as a result of access-constrained patronage growth. Funding is, of course, a critical concern. Progress towards implementing parking expansion projects will subsequently depend upon the District's ability to secure funds through conventional sources as well as through innovative financing methods.

In light of this deficiency, and the role that access has on system patronage in general, the District must reexamine the ways in which other Bay Area transit operations, including BART Express Bus service, can be improved to satisfy both local and BART access needs. As stated on page II-39, cooperative efforts with AC Transit and the BART/MUNI Fast Pass are a major step toward achieving higher levels of coordination of services, fares, and transfers. However, the serious parking deficiency in the Eastbay will continue to constrain ridership until BART's parking expansion program, as outlined in the next section below, can be realized.

BART also recognizes the need to continue to improve system access for mobility impaired persons. The District meets with representatives of the elderly and handicapped community on an on-going basis for the purpose of identifying improvements to increase mobility and safety in stations and on trains. In light of increased attention in this area, the District will need to continue to meet with these representatives as an effective means of improving both accessibility and safety.

Improving the availability of information for transit services in the vicinity of stations is also essential. As a result of the widespread reorganization of AC Transit and MUNI lines in San Francisco and the more recent phasing in of services under the Central Contra Costa Transit Authority, many station area maps located in BART stations are now outdated and need to be replaced with current information. Improvements in these areas are described below with additional detail provided in Appendix C: Inter-Operator Coordination.

PLANNED IMPROVEMENTS

Projects programmed for implementation in the current 5-year SRTF timeframe are discussed in the following sections. The improvements are divided into three basic groups, each relating to specific modes of travel or special considerations. These are: parking, inter-operator coordination, and elderly and handicapped needs. A discussion of access to rail stations via BART Express Bus and planned improvements for this service is included under Extension Service and Capacity beginning on page II-55.

Parking Improvements

Table II-7 on the following page summarizes the District's parking expansion program which is to provide nearly 16,000 new parking spaces over the next six years. This compares to an estimated 1988 shortage of 15,800 parking spaces. This deficiency is based on a March 1983 survey which found that by 9 AM, 95% of BART's station parking is occupied. The realization of this program will increase BART's station parking inventory by 70%, from approximately 23,000 spaces currently to 39,000 spaces.

This parking expansion program includes 39 projects as follows:

- o 11 Parking Productivity Improvements, primarily consisting of redesign of existing lots in order to accommodate more automobiles,
- o 12 Surface Parking Projects, consisting of new spaces to be constructed on BART property which is already owned or to be acquired,
- o 16 Parking Facilities, consisting of multi-level structures at station locations where existing surrounding development does not permit expansion of surface parking.

Nearly 2,000 of the programmed new parking spaces included in the above projects are funded, including almost all of the FY 1985/86 programmed projects.

Table II-7
BART STATION PARKING EXPANSION PROGRAM
FY 1984/85 - FY 1990/91

PROGRAMMED COMPLETION BY FISCAL YEAR	N U M B E R O F S P A C E S		
	<u>FUNDED</u>	<u>UNFUNDED</u>	<u>TOTAL</u>
FY 1985/86	1,926*	925	2,851
FY 1986/87	0	4,524	4,524
FY 1987/88	0	2,515	2,515
FY 1988/89	0	2,250	2,250
FY 1989/90	0	2,700	2,700
FY 1990/91	0	1,135	1,135
GRAND TOTAL	1,926	14,049	15,975

* These include 1,210 spaces to be added at Bayfair (293), South Hayward (199), Concord (204), and El Cerrito del Norte (514) as called for under the District's FY 1984/85 objective. Construction for these 4-station projects is to commence prior to the end of the 1984/85 fiscal year, with their completion anticipated by November 1985.

Table II-8 on page II-45 summarizes the annual parking space additions programmed through FY 1990/91 by station and line segment. As seen in this table, BART expects to add 2,851 new parking spaces during the upcoming 1985/86 fiscal year. These include the November 1985 completion of parking productivity improvements at four stations for a total addition of 1,210 new spaces: Bayfair (293), South Hayward (199), Concord (204), and El Cerrito del Norte (514). In addition to these are three other projects totalling 1,641 more spaces: Fremont (543), Daly City (925 - - includes 825 spaces at the Samtrans Serramonte Park & Ride lot), and South Hayward (173 -- this is a surface parking expansion project, separate from the one above).

Parking expansion for five additional fiscal years (programmed through FY 1990/91) is also summarized in Table II-8.

Inter-Operator Coordination

Efforts to improve the coordination of BART service with other Bay Area transit operators have been intensified, particularly beginning in early FY 1984/85 when the AC/BART purchase of service agreement became effective. This, and other related coordination efforts, recognizes the need for improving transit access to BART as an alternative to access by automobile which is already constrained (for patrons requiring parking at stations).

Planned coordination efforts have been included in the Patronage and Travel Promotion section beginning on page II-18, since improvements in this area are believed to be an effective means of stimulating additional ridership for BART as well as for other transit operations providing service to BART stations. These and other improvements yet to be identified are part of the Regional Transit Association (RTA), Regional Transit Productivity Committee (RTPC), and 842 processes which focus on maximizing transit services, performance, and financial standing on a regional basis.

As part of the above processes, the District plans to implement improvements in the upcoming five-year timeframe for the purpose of enhancing BART service relative to connecting services provided by other Bay Area operators. These include:

- o Ongoing evaluation and analysis of AC bus routes serving BART stations for the purpose of maximizing ridership and revenues to both operators.
- o Similar ongoing evaluation of BART Express Bus and Shuttle services as above.
- o Expansion of the Fast Pass concept to include AC Transit operations with the start-up of implementation of the selected program now anticipated to occur in January 1986 following the approval by the Multi-Operator Pass/Transfer Project Steering Committee (as part of an MTC-lead project).
- o Availability of a Fast Pass and 20-Ticket Book beginning in FY 1985/86 for use on BART Express Buses.
- o Ongoing discussions with AC Transit and CCCTA for the purpose of extending the "Bus Light" program to include additional bus routes which connect at stations currently equipped with this system.

Table II-8

**ANNUAL INCREMENTAL PARKING SPACE ADDITIONS
BY STATION AND LINE SEGMENT
FY 1985/86 - FY 1990/91**

CONCORD LINE:	CURRENT FY 84/85 INVENTORY	N E W S P A C E S										TOTAL 6-YEAR PROGRAM	PROGRAMMED FY 90/91 INVENTORY		
		FY 85/86		FY 86/87		FY 87/88		FY 88/89		FY 89/90				FY 90/91	
Concord	1,771	204	0	300	0	1,700	0					2,204	3,975		
Pleasant Hill	1,652	0	1,200	0	0	0	0					1,200	2,892		
Walnut Creek	1,263	0	1,132	0	0	0	0					1,132	2,395		
Lafayette	1,096	0	216	0	700	0	0					916	2,012		
Orinda	1,096	0	150	0	0	500	0					650	1,746		
Rockridge	776	0	0	0	0	0	0					0	776		
SUBTOTAL	7,654	204	2,698	300	700	2,200	0					6,102	13,756		
RICHMOND LINE:															
Richmond	754	0	200	0	0	0	0					200	954		
El Cerrito del Norte	1,079	514	0	300	500	0	0					1,314	2,393		
El Cerrito Plaza	509	0	150	0	0	0	0					150	659		
North Berkeley	524	0	150	0	0	0	0					150	674		
Ashby	560	0	100	0	0	0	0					100	660		
MacArthur	585	0	0	0	0	500	0					500	1,085		
SUBTOTAL	4,011	514	600	300	500	500	0					2,414	6,425		
FREMONT LINE:															
Fremont	1,525	543	250	0	0	0	0					793	2,318		
Union City	1,166	0	0	500	0	0	0					500	1,666		
South Hayward	890	372	0	835	0	0	0					1,207	2,097		
Hayward	967	0	250	0	300	0	0					550	1,517		
Bayfair	1,468	293	0	80	500	0	0					873	2,341		
San Leandro	1,066	0	250	0	0	0	0					250	1,316		
Coliseum	923	0	250	0	0	0	0					250	1,173		
Fruitvale	787	0	226	100	550	0	876					876	1,663		
Lake Merritt	190	0	0	0	0	0	435					435	625		
SUBTOTAL	8,982	1,208	1,226	1,815	1,050	0	435					5,734	14,716		
SAN FRANCISCO LINE:															
Daly City	1,877	925	0	0	0	0	0					925	2,802		
Glen Park	58	0	0	0	0	0	0					0	58		
Oakland West	403	0	0	100	0	0	700					800	1,203		
SUBTOTAL	2,338	925	0	100	0	0	700					1,725	4,063		
SYSTEM GRAND TOTAL	22,985	2,851	4,524	2,515	2,250	2,700	1,135					15,975	38,960		

- o Installation of a Passenger Information Center at 12th Street Station early in FY 1985/86, as part of a three-phase program to improve the availability of information for connecting transit service. Phase II is to be implemented over the upcoming two years and will include all designated regional transfer stations. Based on an evaluation of Phase I and II, expansion of this program to remaining BART stations may be implemented as a third phase.

Coordination of transit service has a direct impact on how well BART and other operators can respond to an energy crisis. BART's energy contingency strategy reflects efforts carried forth through the Regional Transit Association over the past four years. These efforts resulted in a Regional Energy Contingency Plan which was published in December 1981. Consistent with this plan, BART will emphasize the need to accommodate commute travel to the San Francisco/Oakland regional core for work purposes. In the event of an energy crisis, the District and other Bay Area transit operators are to jointly implement a public information program to encourage flex-time scheduling and ride-sharing, and also to provide information to the public concerning where and during what hours transit capacity is available. The District will adhere to the Regional Energy Contingency Plan recommendation of joining forces with other transit operators to determine the exact nature and severity of the crisis, identify specific actions needed to address it, and adopt a coordinated action plan for immediate implementation. It is further recognized that BART's ability to absorb additional peak period, peak direction riders much beyond today's level is severely limited until at least early 1988 when all 150 new C-cars are available for service and other key projects completed permit increased on-line capacity.

Additional detail concerning Inter-Operator Coordination is included in Appendix C which responds to MTC concerns relating to its annual regional coordination evaluation of transit services.

Elderly and Handicapped Accessibility Improvements

BART recognizes the need to continue to improve system access for elderly and handicapped persons. Prior to the start-up of revenue service in September 1972, the system was retrofitted to accommodate special needs of persons in wheelchairs and for other mobility considerations. Numerous system improvements have been made over the years such as the installation of signs on trains indicating priority seating, electronically controlled doors, additional curb cuts, special ramps, close-in station parking, and restroom modifications. These and other improvements have been implemented primarily as the result of deficiencies which were identified by the BART Task Force on Access for Elderly and Handicapped Persons. This citizens group meets regularly with BART staff to discuss the needs of the elderly and handicapped community with respect to BART access and safety.

Projects to be continued or initiated during FY 1985/86 for the purpose of improving accessibility to BART for elderly and handicapped persons include:

- o Self-operation elevator control improvements at Berkeley and El Cerrito del Norte Stations. Implementation of similar improvements at other stations will depend upon an evaluation of those at Berkeley and El Cerrito del Norte.
- o Completion of secondary station agent booth elevator controls at Civic Center, Embarcadero, Berkeley, and 19th Street Stations.

- o Evaluation of the platform edging which was installed at Montgomery, Berkeley, and Rockridge Stations for the purpose of possibly expanding this project to other stations.

The Task Force on Access for Elderly and Handicapped Persons will focus on reviewing and evaluating the above projects during the upcoming fiscal year. The Task Force will also update its work program which will identify other desired improvements to enhance E&H accessibility.

Specific capital projects and implementation schedules for system access are summarized in Figure II-10 beginning on page II-60.

PROGRAM AREA OBJECTIVES

Revised operating performance objectives for the current SRTP timeframe are identified in Figure II-10 below.

Figure II-10	
SYSTEM ACCESS PERFORMANCE OBJECTIVES	
<u>FY 1985/86</u>	
1.	Provide 2,826 additional BART-owned parking spaces at existing rail stations and potential future station sites.
2.	Continue to implement schedule coordination between BART and AC Transit.
3.	Construct three Park/Ride facilities during summer and fall of 1985 to be operational in early 1986: North Concord/Martinez, Bailey Road, Hillcrest Avenue.
4.	Implement first stage streamlining in all express bus corridors.
5.	Implement flash pass.
6.	Review the effectiveness of the initial implementation of the platform edge and elevator improvement projects and proceed with further implementation as warranted.
<u>FY 1986/87 to FY 1989/90</u>	
1.	Continue to implement access and express bus improvements as identified in the District's Short Range Transit Plan.

PROGRAM AREA H: JOINT DEVELOPMENT

BART's Joint Development Program is a commitment to the general concept of joint development. The key focus of this program is the identification and implementation of development opportunities to be pursued in cooperation with other public entities and/or private developers with regard to BART-owned and adjacent properties.

Early efforts, generally between 1980 and 1983, focused on establishing overall program guidelines, assessing systemwide joint development opportunities, and initiating cooperative working relationships with local jurisdictions. Results of these efforts include a ranking of joint development opportunities for all 34 stations, an analysis of the risks and benefits for different courses of action regarding the disposition of BART property, and cooperative planning efforts with the cities of Concord, Walnut Creek, Pleasant Hill, El Cerrito, and Daly City, and Contra Costa County. This latter effort resulted in amendments to respective local jurisdiction General Plans allowing for higher density development of BART station areas, while at the same time recognizing the need for the formulation of design/development guidelines for marketing of station area property.

Based on the initial work for this program as well as for related activities for access and extension planning, the District Board of Directors adopted a set of implementation policies in June 1984. The policies emphasize the cooperative development of station areas for the primary purpose of assisting the District in realizing new sources of revenue (ie: through long-term lease agreements and higher ridership as the result of more intensive use of station area property).

Specifically, BART's Joint Development program seeks to coordinate comprehensive planning and development of existing and future stations. In addition to an expanded revenue base, benefits of this program include the return of real property to local jurisdiction tax rolls, stimulation of the local economy by creating investment opportunities, and encouragement of transit-linked projects as an alternative to dispersed development dependent upon automobile access.

FY 1984/85 OBJECTIVE STATUS

The first objective for Joint Development this year is to complete predevelopment planning at Pleasant Hill and Walnut Creek (in advance of issuing requests for proposals for specific development projects at these stations). The response to this objective for Pleasant Hill is the formulation of a development agreement between the District and Contra Costa County which calls for the long-term protection of BART's development potential and also which defines each party's responsibility in implementing requisite public improvements for the development of specific properties. As of December 1984, the formulation of this agreement was in its final stage, and predevelopment planning for Pleasant Hill is estimated at 95% complete.

The proposed Walnut Creek Core Area Plan, currently before the Walnut Creek City Council and Planning Commission, contains provisions that would allow for approximately 500,000 to 600,000 square feet of private commercial development on District property in structures of up to 10 floors. Final action on this plan is not expected prior to the March special election concerning building height limitations. Predevelopment planning for Walnut Creek is estimated to be 80% complete as of December 1984.

The second FY 1984/85 objective for this program area is to initiate a station area development plan for Richmond Station by June 1985. Progress with regard to this objective includes the initiation of negotiations with the City of Richmond early this fiscal year. Budgetary constraints, however, have limited the City's involvement in this activity.

The third Joint Development objective this fiscal year calls for the preparation and issuance of requests for proposals for projects at Walnut Creek and Pleasant Hill by June 1985 (assuming completion of predevelopment planning and favorable market conditions). As noted above, community concern for downtown growth in

Walnut Creek has resulted in a special ballot measure regarding building height limitations. Issuing RFP's for specific station area projects in Walnut Creek is on hold pending the outcome of this election which is to be held in March 1985. For Pleasant Hill, efforts are currently focusing on issuing RFP's for an hotel in the vicinity of Pleasant Hill Station.

Additional activities for Joint Development during July-December 1984 include negotiations with a private developer regarding an agreement for a special entrance at Embarcadero Station, and the coordination of planning efforts for the District's parking program and the location of future extension stations.

FUTURE OUTLOOK

It is anticipated that Joint Development activities during the second half of FY 1984/85 will include a presentation to the BART Board of Directors and request for approval of the development agreement between the District and Contra Costa County. Concurrent with this effort, will be the completion of preliminary planning necessary to market a site near Pleasant Hill Station for an hotel to be developed by a private firm.

As stated above, Joint Development activities for Walnut Creek are pending the outcome of a special March 1985 election regarding downtown building heights. It is anticipated that this issue will be resolved prior to the end of the current fiscal year, at which time an appropriate course of action will be determined. Marketing efforts will also be focused on other key sites in Alameda and Contra Costa Counties.

It is anticipated that BART and the City of Richmond will begin work in February 1985 to determine a scope and level of effort for a plan addressing development in the vicinity of Richmond Station. Institution of actual planning work is likely by June 1985 or during the early part of FY 1985/86. Work is also being initiated with the City of Fremont, and preliminary discussion will begin regarding possible joint study with the City of Oakland for the MacArthur Station.

PLANNED IMPROVEMENTS

Joint Development efforts will continue to focus on completing work already initiated and to achieve the overall intent and objectives of this program area. The three-phased approach which has been developed, consisting of pre-development planning followed by site marketing and property disposition, will continue to be used.

Efforts will also focus on providing support to extension planning activities, specifically at Warm Springs, West Pittsburg, and Dublin extension stations. A companion effort will be the monitoring of development trends within extension corridors as well as along existing routes. Additionally, support will be given to the area of expanded station parking.

It is anticipated that negotiations regarding special entrances to Powell Street Station will take place in response to projects currently underway directly above this subway station. Market strategies are to be developed, including ones which address non-station oriented properties.

Finally, efforts will be directed toward the investigation of benefit assessment districts as a possible course of action related to station area development.

PROGRAM AREA OBJECTIVES

Updated performance objectives for the station area development program are identified in Figure II-11 below.

Figure II-11

JOINT DEVELOPMENT PERFORMANCE OBJECTIVES

FY 1985/86

1. Achieve development planning milestones at Richmond, Fremont, Concord and Daly City:
 - Richmond - Complete market analysis and urban design components of specific plan.
 - Fremont - Secure city approval of general plan amendment allowing intensive commercial or mixed use development on BART property.
 - Concord - Achieve inclusion of BART's development plans in the urban design guidelines being prepared by City staff for Council approval.
 - Daly City - Complete joint planning work on the Specific Plan so that it is ready to be submitted for formal approvals by the Council.
2. Assuming adequate developer response to the Pleasant Hill Hotel RFP, negotiate an acceptable ground lease and development agreement by February 1, 1986.
3. Implement direct marketing effort aimed at large corporate anchor tenants for such marketable sites by September 1, 1985.
4. Initiate transit center plans, assuming necessary land acquisitions at West Pittsburg, Dublin and Warm Springs by June 30, 1986.

FY 1986/87 to FY 1989/90

1. Continue station area development planning efforts in preparation for marketing specific sites for development.
2. Market specific sites as market conditions and local planning efforts dictate.

PROGRAM AREA I: EXTENSION SERVICE AND CAPACITY

The original BART plan included a multi-phased program to provide rail service well beyond areas presently served. The withdrawal of San Mateo and Marin counties prior to the 1962 bond election resulted in voter approval of the 71-mile basic system in the current three-county District and indefinitely postponed further development of the rail system. Over the years, the District has continued to coordinate expansion plans with local agencies while investigating the full impacts of extending the system. Extension plans have received intensive public and private review, and they continue to be revised and updated in response to suburban growth and changing economic conditions. The District's adopted extension policy is summarized on page II-52.

As an interim measure until extensions can be constructed, BART provides Express Bus service between key transfer stations and regional travel corridors in the District not presently served by rail as described below and in Table II-10 on pages II-55 through II-58.

Past study has indicated BART to be a viable mode for serving regional transit needs in five travel corridors located in the current three-county District: Pittsburg-Antioch, Warm Springs (Fremont), Livermore-Pleasanton, San Ramon, and the West Contra Costa I-80 corridor. In addition to these corridors, BART has also been investigated as a potential regional transit improvement in the Bayshore (US 101) corridor in San Mateo County. This latter extension, however, involves resolving the issues of extending BART outside the three-county District priority.

FY 1984/85 OBJECTIVE STATUS

Four objectives were adopted by the District Board of Directors for Extension Service and Capacity for FY 1984/85. The first of these objectives calls for securing an UMTA approved workscope by June 1985 for the Alternatives Analysis/Draft Environmental Impact Requirements for BART's Phase I extensions. To date this approval has not been received.

The second FY 1984/85 objective for Extension Service and Capacity is to complete acquisition of purchasable station sites in phase I of the BART extension policy and complete acquisition of all planned park/ride lot sites by June 30, 1985. As of December 1984, 8 of the 27 required first phase extension parcels were acquired (29.6%). The status for all 27 parcels is summarized in Table II-9 on page II-53.

A third objective for this program area calls for the initiation of transit center plans and agreements by June 1985 for West Pittsburg, Dublin, and Warm Springs. These planning efforts have been deferred until the station site efforts are concluded.

The fourth objective for Extension Service and Capacity related to the implementation of "streamlined" express bus service within rail extension travel corridors. Specifically, this objective calls for revising the BART express bus system for park/ride/freeway operation using newly constructed park/ride lots, interim park/ride lots, and high density express bus stops. As of December 1984, approximately 25% of the express bus improvements slated for implementation this fiscal year were completed. These include implementation of the "ME" Express Bus route between Martinez and Concord on March 10, 1985 and implementation of Twenty Ride Coupon Books to streamline Express fare collection procedures scheduled for June 1985.

Other activities during July-December 1984 for Extension Service and Capacity include finalizing alternatives for the Fremont-South Bay Corridor Study (which includes a BART extension to Warm Springs), initiating the San Ramon Branchline Transportation Study (for which three BART alternatives have been included), release of initial findings for Phase I of the I-580/I-680 Corridor Study and the subsequent start-up of Phase II of this study, and presentations in various locations in both Alameda and Contra Costa counties. Additionally, progress during the first half of FY 1984/85 includes the refinement of the three BART alternatives in the State requested (SCR 74) Peninsula Mass Transit Study. Efforts for this study include an identification of the institutional and financial implications of implementing a BART extension outside the current three-county District.

Figure II-12

ADOPTED BART EXTENSION STAGING¹

WITHIN CURRENT THREE-COUNTY DISTRICT PRIORITY

- I. North Concord/West Pittsburg
Irvington/Warm Springs
Castro Valley/Dublin
San Francisco Airport²
- II. Pittsburg/West Antioch/East Antioch
Pleasanton/West Livermore/East Livermore
San Francisco³
I-80 Corridor (Partial)
- III. San Francisco³
I-80 Corridor (Partial)
San Ramon Corridor

OUTSIDE CURRENT DISTRICT (Subject to a satisfactory cost-sharing arrangement)

- I. Serramonte/Tanforan
- II. Millbrae
Milpitas/San Jose
- III. Burlingame/Menlo Park/Palo Alto/San Jose

1. The several segments shown under each Roman numeral are understood to be implemented concurrently.
2. In accordance with Resolution No. 3095 adopted by the District Board of Directors on February 1, 1984, BART supports the establishment of a people-mover, or some other mode of travel, to the Oakland Airport before or at the same time that an extension of BART is built to San Francisco Airport.
3. San Francisco has a BART commitment for a northwest corridor extension or an equivalent project.

Table II- 9
ACQUISITION STATUS FOR PHASE/PRIORITY I
EXTENSION LAND REQUIREMENTS
(Number of Parcels Required)

<u>STATION SITE OR ALIGNMENT</u>	<u>EXTENSION CORRIDOR</u>	<u>TOTAL REQUIRED</u>	<u>NOT YET ACQUIRED</u>	<u>ALREADY ACQUIRED</u>	<u>UNWILLING SELLER</u>
East Antioch Station	Pittsburg-Antioch	5	0	4	1
West Pittsburg Station	Pittsburg-Antioch	2	1	1	0
North Concord Station	Pittsburg-Antioch	1	1	0	0
Castro Valley Station	Livermore-Pleasanton	2	0	2	0
Dublin Station	Livermore-Pleasanton	6	2	0	4
Irvington Station	Warm Springs	7	5	1	1
Mission Station ¹	Warm Springs	1	1	0	0
Track Alignment, Irvington	Warm Springs	3	3	0	0
GRAND TOTAL		27	13	8	6

1. Mission Station (referred to as "Warm Springs" station in the Adopted BART Extension Staging on page II-52) has been included in Priority I sites to be acquired due to recently emerging development pressures with respect to the required parcels.

FUTURE OUTLOOK

Extension planning activities for the remainder of the 1984/85 fiscal year are expected to focus on the four BART projects included in the MTC New Starts and Extensions Program. BART participation will continue on the Fremont to South Bay Corridor Study and the Peninsula Mass Transit Study. Efforts will continue in negotiating the acquisition of Priority 1 right-of-way sites, which include all station sites in Phase 1 of the Extension Staging Plan, and the acquisition of all planned park/ride sites.

PLANNED IMPROVEMENTS

Extension planning efforts within the current five year SRTP timeframe will focus on completing the Alternatives Analysis/Draft Environmental Impact Requirements for Phase I of the Extension Staging policy. Concurrent efforts will focus on preserving extension rights-of-way through coordination with local planning agencies and pursuing the acquisition of Priority I parcels. Partial funding for this purpose has been provided through a capital allocation from the District's operating budget. Additional tasks will determine the location of four West Contra Costa County extension stations and evaluate the Livermore-Pleasanton Extension alignment between Dublin and Livermore.

Prior to the completion of BART extensions in the East Bay corridors, the District will continue to provide Express Bus service and implement improvements to this service. A full description of current and planned express bus improvements within each of four corridors is summarized on pages II-55 through II-58.

Subject to specific project approval by the Board, the park/ride projects programmed for design in 1984/85 are scheduled to be constructed during the summer and fall of 1985 and should be operational in early 1986. These projects are:

North Concord/Martinez Park/Ride Facility
(Pittsburg-Antioch BART Extension, 500 spaces)

Baily Road Park/Ride Facility
(Pittsburg-Antioch BART Extension, 200 spaces)

Hillcrest Avenue Park/Ride Facility
(Pittsburg-Antioch BART Extension, 200 spaces)

Efforts are continuing to coordinate with local cities and transit operators to implement the first stage of Express Bus streamlining in P (Highway 4, Concord-Brentwood), D (San Ramon Valley, Walnut Creek-Dublin), U (I-580, Bayfair, Hayward-Livermore-Pleasanton), and Q (El Cerrito del Norte BART-Rodeo) Express Bus Corridors. Since all park/ride facilities will not be completed when Phase I streamlining begins, Express Buses will make "touch and go" stops at freeway off-ramps where park/ride lots are proposed. Local bus and kiss/ride access will feed the Express Bus system at these locations until park/rides can be constructed.

The incremental Express Bus streamlining plan outlined in Table II-10, identifies an improvement schedule which enables local transit operators to take over the locally oriented service now being provided by BART. Since none of the local operators in the Express Bus corridors are in a position to take over the seven

Table II-10 Express Bus Streamlining Plan

EAST CORRIDOR

TIME PERIOD	EXPRESS BUS SERVICE DESCRIPTION	PP	MID	EVE	SAT	SUN	TT	COMMENTS
Current	P- Port Chicago-Hwy to Antioch	8 trps.	-	-	-	-	50	30 stop locations
	P1- Port Chicago Hwy to Brentwood	1 trp.	3 trps.	-	-	-	73	73 stop locations
	PX- Highway 4 to Antioch	30	60	-	-	-	50	28 stop locations
	PIX-Highway 4 to Brentwood	60	60	-	-	-	68	65 stop locations
	P2X-eve/w'end serv to Pitt-Brent	-	-	60	60	60	90	89 stop locations
June 1985	P-E Concord to Brentwood	30	60	-	-	-	60	20 stop locations
	P2X Concord to Brentwood	-	-	60	60	60	90	89 stop locations
Upon completion of park/ride lots	P-E Concord to Antioch	15-30	15-30	-	-	-	60	Stops only at 200 space Park/Rides at Hillcrest, Bailey Road and North Concord.
	P2X Concord to Brentwood	-	-	60	60	60	90	

PP = Peak period (6:00 a.m.-9:00 a.m., 4:00 p.m.-7:00 p.m.)

MID = Midday

EVE = Evening

SAT = Saturday

SUN = Sunday

TT = Travel times

All times in minutes

Table II-10(continued)

CENTRAL CORRIDOR

TIME PERIOD	EXPRESS BUS SERVICE DESCRIPTION	PP HEADWAY	MID HEADWAY	DAILY HOURS	ONE-WAY TRAVEL TIME	COMMENTS
Current	Weekday D Route - W.C. BART to Stoneridge via Dublin on I-680 Frontage Road	30 minutes	30 minutes	95	61 minutes	
	Saturday D Route - W.C. BART to Stoneridge via Dublin on I-680	45-60 min.	45-60 min.	46	61 minutes	
	Sunday D Route - W.C. BART to Stoneridge via Dublin on I-680 Frontage Road	60 minutes	60 minutes	39	61 minutes	57 stops for all levels of service
	Supplemental Service					School trips
	NX	1 AM/1 PM		3	21 minutes	
	Weekday M Route - Concord BART to Martinez via local streets	30 minutes	30 minutes	50	43 minutes	46 stops for all levels of service
	Sunday M Route - Concord BART to Martinez via local streets	60 minutes	60 minutes	27	39 minutes	
	Supplemental service					M Route trippers
	ME Express svc. via Alhambra Av., Hwy 4 & I-680-Martinez to Concord	30 minutes	No service	32	25 minutes	6 stops
	ME Saturday evening service 6 PM to midnite			12	25 minutes	Service to operate at 60 minute headways
February 1986	ME Sunday service	60 minutes	60 minutes	17	25 minutes	
	DX freeway express - Walnut Creek BART to North Pleasanton	30 minutes	No service	32	50 minutes	I-680 "Touch and Go" stops at Livorna Rd., El Cerrito Rd., off freeway for Crow Canyon loop.
	DXI freeway/with some local service - Walnut Creek BART to Stoneridge. Route will also operate weekday evenings at 60 minute headways	30 minutes	30 minutes	63	40 minutes	I-680 Corridor service with Frontage Rd. segment between Stone Valley and Sycamore Valley Rd. "Touch and Go" stops at Rudgear, Livorna and off freeway for Crow Canyon loop.
	D local service - Walnut Creek BART to Dublin, weekend service Saturday Sunday	45-60 min. 60 minutes	45-60 min. 60 minutes	46 39	61 minutes 61 minutes	Same routing as current D route
	DX freeway express - Walnut Creek BART to North Pleasanton	30 minutes	No service	32	50 minutes	I-680 "Touch and Go" stops at Livorna Rd., El Cerrito Rd., off freeway for Crow Canyon loop.
June 1986	DXI freeway express - Walnut Creek BART - Stoneridge	30 minutes	30 minutes	63	32 minutes	I-680 "Touch and Go" stops at Livorna Rd., El Cerrito Rd., Sycamore Valley Rd., and Alcosta Blvd.

TABLE II-10 (Continued)

SOUTH CORRIDOR

TIME PERIOD	EXPRESS BUS SERVICE DESCRIPTION	PP	MID	EVE	SAT	SUN	TT	COMMENTS
Current	U Local Pleasanton, Livermore local service	30	30	60	30	60	55	29 stop locations
	U-L Express service Bayfair to Livermore	30	-	-	-	-	50	9 stop locations
	U-P Express service Bayfair to Pleasanton	30	-	-	-	-	40	18 stop locations
June 1985	UP Bayfair BART to Pleasanton	30	-	-	-	-	40	Revised routing via Foothill, Stoneridge, Willow, Las Positas, Santa Rita, Valley, Hopyard, and Dublin Blvd.
September 1985	UL Bayfair BART to Livermore	30	60	-	-	-	50	
	U Bayfair, Pleasanton, Livermore local service	30	60	60	30	60	55	

PP = Peak period (6:00 a.m.-9:00 a.m., 4:00 p.m.-7:00 p.m.)

MID = Midday

EVE = Evening (7:00 p.m. - 12:00 midnight)

SAT = Saturday

SUN = Sunday

TT = Travel times

All times in minutes

Table II-10(continued)

WEST CORRIDOR

TIME PERIOD	EXPRESS BUS SERVICE DESCRIPTION	PP HEADWAY	MID HEADWAY	DAILY HOURS	ONE-WAY TRAVEL TIME	COMMENTS
Current	Q Express Bus service from El Cerrito del Norte to Pinole	30 minutes	30 minutes	44	35 minutes	32 current stop locations
	J Express Bus service from El Cerrito del Norte to Rodeo	30 minutes	No service	15	35 minutes	20 current stop locations
	Q Saturday service from El Cerrito del Norte to Pinole	30 minutes	30 minutes	31	30 minutes	
September 1985	QX (experimental route) El Cerrito del Norte BART to Willow Avenue Park/Ride	30 minutes	No service	13	30 minutes	Route will serve: 100 space park/ride Willow Avenue, 100 space park/ride Hilltop Drive, and Pinole Valley Road I-80 stop
	QX-1 (experimental route) El Cerrito del Norte BART to Crockett	60 minutes	No service	3	35 minutes	Route will serve: 100 space park/ride Hilltop Drive
	Q-1 El Cerrito del Norte BART to Pinole Valley Road	45 minutes	No service	8	23 minutes	Route will serve: 100 space park/ride Hilltop Drive and Applan Way I-80 stop
	Q-2 El Cerrito del Norte BART to San Pablo Avenue in Pinole	45 minutes	No service	8	25 minutes	Route uses I-80 eastbound and San Pablo Avenue westbound
	Q local existing route will run at following headways: Weekdays Saturdays Sundays	No service 30 minutes 60 minutes 60 minutes	30 minutes 60 minutes 60 minutes	17 28 26	30 minutes 30 minutes 30 minutes	Sunday service to be operated on an experimental basis to be evaluated for sufficient patronage for continuation
	J revised routing- El Cerrito del Norte BART to Rodeo	60 minutes	No service	8	25 minutes	Route will serve: 100 space park/ride Willow Avenue, 100 space park/ride Hilltop Drive, and Pinole Valley Road I-80 stop

day, 6:00 a.m. to midnight level of BART bus service being provided at this time, it is proposed that the transition be made first for weekday service, then for Saturday service, and finally with late evening weeknight, and Sunday service.

It is anticipated that weekday Express Bus service in all four corridors (Highway 4, San Ramon, West Contra Costa County, and I-580) will be streamlined prior to the end of the five-year SRTP timeframe. An additional improvement is to streamline Express Bus fare collection procedures through the implementation of a twenty ride ticket book and flash pass for express bus patrons who transfer to BART.

PROGRAM AREA OBJECTIVES

The performance objectives for this program area are identified in Figure II-13 below:

Figure II-13

EXTENSION SERVICE AND CAPACITY PERFORMANCE OBJECTIVES

FY 1985/86

1. Pursue acquisition of all Priority I sites as identified in the Extension Right-of-Way and Facilities Expenditures program within available funding.
2. Identify grant sources for right-of-way funding and prepare appropriate applications.
3. Work with local communities, developers and property owners to encourage local community acquisition, dedication, preservation and joint development of potential extensions properties.
4. Initiate the Alternatives Analysis/Draft Environmental Impact Requirements for Phase I of the Extension Staging policy.

FY 86/87 to FY 89/90

1. Continue to implement the Extension Right-of-Way Acquisition Program.
2. Complete the Alternatives Analysis and Final Environmental Impact Requirements for Phase I of the BART Extension Staging policy.

Figure 11-14: 1985 SRTP CAPITAL PROJECT LIST*

PROJECT NUMBER	PROJECT TITLE	COMPLETION DATE	BRIEF STATEMENT OF PURPOSE
41BH	MOTOR REMIND UPGRADE	07-85	REDUCE FAILURE RATE FOR TRACTION MTRS
15AW	ADDITIONAL MILEPOST SIGNS	07-85	IMPROVE MAINLINE LOCATION INFO-SAFETY
7910	OVERHAUL WHEEL TRUING MACHINE	08-85	IMPROVE MAINTENANCE FOR VEHICLES
41JG	NEW DBL POSITIV PLATE BATTERIES	09-85	REDUCE FAILURE RATE ON A-CARS
111G	REPLACE SECURITY DOORS-CC STA	09-85	IMPROVE EMPLOYEE SAFETY AT CIVIC CENTE
21EB5	ACI SYSTEM IMPROVEMENT - YARDS	09-85	PROVIDE BETTER CAR ID INFORMATION
79B-	REPL OVERAGE SED/MNT VEH (82/4)	10-85	ROUTINE VEHICLE REPLACEMENT
01QE	155-SP PKG EXPAN/PH I - SHS(IV)	10-85	ACCESS IMPROVEMENT AT SOUTH HAYWARD
04GA	200-SP BAILEY RD PK/RD LOT-ANS	11-85	PARK RIDE/FUTURE STATION SITE
04NA	200-SP HILLCREST AV P/R LOT-ANS	11-85	PARK RIDE/FUTURE STATION SITE
07CB5CC	KE TRACK (KET)	11-85	IMP THROUGH PUT IN OAKLAND AREA-CAP EX
1111	RESTROOM ACCESS MODS - CCS	11-85	INCREASE SECURITY AT CIVIC CENTER
270B5	RADCOM	12-85	UPGRADE SYSEMT WIDE RADIO COMMUNICATIO
11FH	STA VENTILATN FAN CONTROL MUDS	12-85	IMPROVE SAFETY OF FAN CONTROLS
20AC	ELIMINATE STATION INTERFACES	12/85	TRAIN CONTROL THROUGHPUT INCREASE
03FD	FIRE MAIN MODIFICATIONS(BHT)	01-86	SAFETY IMPROVEMENT-DERKELEY TUNNEL
45AH	AC/BART/MUNI SUPER PASS	01-86	DEVELOPMENT OF LONG-TERM PASS
03CG	WET STANDPIPE WALNUT CK TUNNEL	02-86	FIRE SAFETY IMPROVEMENT
42CA	NEW VEHICLE ATC-PREPRODUCTION	04-86	NEW AUTOMATIC TRAIN CONTROL
03FK	2ND PWR TRANSFORMER/E-PORTL-BHT	05-86	UPGRADE POWER FOR CAPACITY INCREASE
27B3	COMMUNICATNS CABLE NETWORK-CCN	06-86	IMPROVE DATA TRANSM*N FOR CAPICITY PROG
41BG	BRAKE GRID HEAT SHIELDS	07-86	IMPROVE VEHICLE FIRE RESISTANCE
41EB	HANDRAILS (VESTIBULE)	07-86	IMPROVE PATRON COMFORT
41EI	VEHICLE FIRE HARDENING	07-86	IMPROVE VEHICLE FIRE RESISTANCE
45CB	*B* RETROFIT - CUBIC AFC	08-86	REDUCE FAILURE RATE OF FARE MACHINES
01XG	PERM IMPS/CALTRANS LOT-FMS(I)	10-86	ACCESS IMPROVEMENT AT FREMONT
79--	REPL MAINT EQ (82/4)	10-86	ROUTINE MAINTENANCE EQUIPMENT REPLACH
270B	PLATFORM PA EXT ABOVE GRD STAS	11-86	IMPROVE PASSENGER COMMUNICATIONS
09FE	RPLC PCB TRANSFORMER @ SF VENT	11-86	REMOVE ENVIRONMENTAL HAZARD
45AC	EXPAND AFC DAS CAPABILITY	12-86	PROVIDE BETTER PATRON A FARE COLL INFO
61--	INTEGRATED CONTROL SYSTEM -ICS	01-87	REPLACE CENTRAL COMPUTER-CAPACITY EXPN
42--	2ND GEN TRANSIT VEHICLES/ATC	05-87	PROVIDE ATC FOR NEW C-CARS-CAP EXPN
42AA5	150 2ND GEN TRANS VEH W/PRO ATC	05-87	PURCHASE ADD*NL RAIL VEHICLES-CAP EXPN
79B-	REPL OVERAGE SED/MNT VEH (84/6)	09-87	ROUTINE REPLACEMENT OF WORN OUT VEH*LS
41GB	2ND GENERATION AT0/136 A-CARS	11-87	REDUCE FAILURE RATE FOR A-CARS
11XX	DAILY CITY TURNBACK & YARD PROJ	06-88	PROVIDE OFFLINE TURNBACK-CAPACITY EXPN

* Project Review Board approved projects. Project listing in SRTP may not match exactly due to lag in submittal for approval.

Figure II-14: 1985 SRTP CAPITAL PROJECT LIST*

PROJECT NUMBER	PROJECT TITLE	COMPLETION DATE	BRIEF STATEMENT OF PURPOSE
15LC	ESCALATOR REHABILITATION PROG.	06-88	REDUCE FAILURE RATES AND MAINTENANCE
45BF	IBM TICKET TRANSPORT RETROFIT	03-89	REDUCE FAILURE RATES AND MAINTENANCE
0-B-2	EXTENSIONS R.O.W. ACQUISITION	06-97	PURCHASE RIGHT OF WAY FOR EXTENSIONS
06KA	1200-SP PKRQD LOT/PH I -HRS(XR)	TBD	HERCULES PARK RIDE LOT/FUTURE STA SIT
64BD	MIS COMPUTER UPGRADE-HRQW65FTW	TBD	IMPROVE PERFORMANCE OF IBM COMPUTER
02AC	FREMONT-S. BAY STUDY & AA/EIS	TBD	ALTS ANALYSIS OF FUTURE EXTENSION
04AC	IEIR & PREL ENGRG/P-LINE PH I	TBD	ALTS ANALYSIS OF FUTURE EXTENSION
15AZ	WET STANDPIPE & FD CONNS-2L STA	TBD	IMPROVE FIRE SAFETY AT STATIONS
15CL	RAIL REPL PH V (86/77)	TBD	MAINTAIN RAIL TO ALLOW SERVICE
15CM	2ND RAIL REPL PROG (1) FY 87/88	TBD	MAINTAIN RAIL TO ALLOW SERVICE
08KA	BUS TRANSFR/PRKRIDE LOT-WLV(XR)	TBD	LIVERMORE PARK RIDE LOT/FUTURE STA SIT
06KB	300-SP PKRQD LOT/PH II-HRS(XR)	TBD	HERCULES PARK RIDE/FUTURE STA SITE
01WD	TRANSFER INFORMATN CENTER(FMS)	TBD	IMPROVE TRANSFER INFORMATION/FREMCNT
03LG	FRINGE PKG FACILITY -WCS (1)	TBD	ACCESS IMPROVEMENT AT WALNUT CREEK
03NE	1200-SP.WEST LOT EXPANS-PHS(1)	TBD	ACCESS IMPROVEMENT AT PLEASANT HILL
04DA	BUS STATN PARKRIDE LOT-NCM(XR)	TBD	PARK RIDE/FUTURE STATION SITE
11FG	2 END STAIRWAYS-PLATF/MEZZ-EMS	TBD	IMPROVE EXITING FORM PLATFORM/SAFETY
15VG	SELF OPERATOR-ELEVATORS/HNDICPD	TBD	IMPROVE ACCESSIBILITY FOR HANDICAPPED
27BX	PLATFORM CCTV-DOWNTOWN STAINS	TBD	MONITOR PLATFORMS WITH TV IN CENTRAL
XXXX	BART'S ENHANCED TRANSIT SYSTEM	TBD	TRAIN CONTROL FIXES FROM SYS PERF STDY
20AE	NON E-O-LINE MAKES & BREAKS	TBD	IMPROVE USE OF C-CAR TRAIN SIZING
20BF	TIMELOCKING MODS	TBD	IMPROVE THROUGHPUT IN INTERLOCKINGS
20HB	ADD*L STATION ESSENTIAL POWER	TBD	PROVIDE BACKUP POWER FOR T/C & COMMUN
27E9	REPL FIELD COMPUTERS-DAS (PHI)	TBD	IMPROVE MAINT & PATRON STATS
15EG	ELECTRICAL CAPACITY IMPROVEMENT	TBD	PROVIDE THRD RAIL POWER FOR CAP PROG
79--	REPL MAINT EQ (84/6)	TBD	ROUTINE REPLACEMENT OF WORN EQUIPMENT
79AC	NEW VANS FY 85/86	TBD	ADD*NL VEHICLES FOR CAPACITY INCREASE
79AC	NEW VANS FY 87/88	TBD	ADD*NL VEHICLES FOR CAPACITY INCREASE
79AD	NEW PICKUPS FY 85/86	TBD	ADD*NL VEHICLES FOR CAPACITY INCREASE
79AD	NEW PICKUPS FY 87/88	TBD	ADD*NL VEHICLES FOR CAPACITY INCREASE
79DA	NEW HI-RAILERS - GEN FY 86/87	TBD	ADD*NL VEHICLES FOR CAPACITY INCREASE
79DA	NEW HI-RAILERS - GEN FY 87/88	TBD	ADD*NL VEHICLES FOR CAPACITY INCREASE
79GN	OFFICE COPIERS	TBD	REPLACE WORN OUT COPIERS AT LAKE MERRY
79IV	VACUUMS & SCRUBBERS FY 85/86	TBD	ADD*NL EQUIPMENT OF CAPACITY INCREASE

* Project Review Board approved projects. Project listing in SRTP may not match exactly due to lag in submittal for approval.

Figure 11-14: 1985 SRTP CAPITAL PROJECT LIST*

PROJECT NUMBER	PROJECT TITLE	COMPLETION DATE	BRIEF STATEMENT OF PURPOSE
XXXX	AERIAL BARRIERS- PH 1&II	TBD	PROVIDE SOUND DEADENING IN ALBANY
XXXX	SYSTEM SAFETY UPGRADE-PH III(II)	TBD	POTENTIAL PROJECTS ORDERED BY PUC
XXXX	COURTESY PHONE BACKUP ANS CAPAB	TBD	IMPROVE ACCESSIBILITY FOR HANDICAPPED
0---6	BART SYSTEM EXTENSIONS	TBD	FOUR EXTENSIONS
01EE	1435-SP PRK FAC-LWS	TBD	ACCESS IMPROVEMENT AT LAKE MERRITT
01GG	ALAMEDA PARKRIDE LOT FVS	TBD	PARK RIDE FOR FRUITVALE SATATION
01MG	1200-SP SOUTH PKG EXPAN-BFS(IV)	TBD	ACCESS IMPROVEMENT AT BAY FAIR STATION
01VG	1500-SPACE SATELLITE LOT-UCS(II)	TBD	ACCESS IMPROVEMENT AT UNION CITY
03JE	PERM IMPVT/CALTRANS LOT-LAS (I)	TBD	ACCESS IMPROVEMENT AT LAYFAETTE
05MD	COMPLETE WEST END OF LOT (RIS)	TBD	BASIC SYSTEM OBLIGATION
11ED	1100-SPACE PARKNG EXPAN-OWS(II)	TBD	ACCESS IMPROVEMENT AT OAKLAND WEST
15N-	PH IV SYSTM ACCESSIBILITY IMPS	TBD	HANDICAPPED IMPROVEMENTS
79--	REPL MAINT EQ (86/8)	TBD	ROUTINE MAINTENANCE EQUIPMENT REPLACEM
79--	REPL OVERAGE SED/MNT VEH(86/8)	TBD	ROUTINE VEHICLE REPLACEMENT
79B-	REPL OVERAGE SED/MNT VEH(88/90)	TBD	ROUTINE VEHICLE REPLACEMENT
79B-	REGIONAL EMERGENCY TRAINING PROGRAM	TBD	PROGRAM TO IMPROVE SAFETY TRAINING
98DD			

* Project Review Board approved projects. Project listing in SRTP may not match exactly due to lag in submittal for approval.

CHAPTER III

FIVE YEAR FINANCIAL PLAN

Given the foregoing identification of specific performance objectives for the five-year period, it is the purpose of this chapter to identify the financial requirements for implementing proposed improvements and service expansion, to highlight problems limiting implementation, and to recommend feasible solutions in the form of a five-year financial plan. This chapter is comprised of two sections, focusing first on the operating budget projections and then on capital budget projections. Underlying assumptions are presented within each of these sections. Summary financial projections are then shown in tabular form. Problems resulting from the projections are highlighted and proposed solutions discussed.

FIVE-YEAR OPERATING BUDGET PROJECTIONS

The District's five-year operating budget projections are based on the adopted FY 1985/86 budget. The District's five-year operating budget projections appear in Table III-1.

FY 1985/86 OPERATING BUDGET

The tentative operating budget for FY 1985/86 has been developed to meet the previously described goals and objectives. Year-to-year comparisons below are in terms of the adopted FY 84/85 budget.

The budget anticipates net fare revenues of \$78.6 million with a rail farebox ratio of 51.4%, and other operating revenues of \$8.1 million, resulting in an operating ratio of 52.9%.

Property Tax receipts are estimated at \$6.4 million, and Sales Tax receipts are forecast at \$86.1 million.

Operating Expenses are anticipated to increase by \$14.2 million (9.5%) over the FY 1984/85 budget with a total of \$163.9 million for the year.

Net labor cost is expected to increase, \$4.2 million, (4.0%). Labor cost is based primarily on contractual wage and salary increases, plus the increased cost of providing existing fringe benefits. Approximately \$0.4 million of this increase is due to the planned expansion of peak and offpeak service as noted above.

Total nonlabor cost is expected to increase by \$10.0 million (21.8%), as follows. The cost of the Express Bus and Shuttle Program is expected to decrease by \$0.4 million. New initiatives to make this program more financially effective are expected to continue during FY 1985/86. The purchase of feeder service from AC Transit is expected to cost \$5.5 million.

Traction/Station Power cost is expected to be \$3.4 million higher than the cost budgeted for FY 1984/85. Of the projected increase, about \$0.1 million is for expanded service. Other nonlabor expense is expected to increase by \$1.4 million; \$0.4 million is associated with new service.

TABLE III-1

REVISED FIVE-YEAR OPERATING BUDGET PROJECTIONS
 ASSUMING FARE INCREASES OF 30% PER YEAR 1, 1986 AND 15% JANUARY 1, 1989
 (\$ '000)

	Actual 1984/85	Budgeted 1985/86	Projected 1986/87	Projected 1987/88	Projected 1988/89	Projected 1989/90
REVENUES						
1 Net Rail Revenue	66,444	77,308	88,914	95,251	102,350	110,571
2 Net Rail Revenue: Normal Growth/Offpeak Marketing	0	0	88,914	95,251	102,350	110,571
3 Express Bus Revenue	1,027	1,320	1,500	1,500	1,616	1,722
4 Net Passenger Revenue	67,468	78,628	90,460	97,208	109,481	121,344
5 Interest Earnings	5,453	6,243	5,159	5,163	5,165	5,167
6 Total Operating Income	72,921	84,871	100,772	107,534	119,813	131,678
7 Other Operating Revenues	1,395	1,739	1,848	1,960	2,077	2,199
8 Other Operating Expenses	6,848	8,062	7,089	7,708	7,892	8,066
9 Net Operating Revenues	\$74,316	\$86,690	\$98,049	\$104,916	\$117,373	\$129,430
EXPENSES						
10 Net Labor - Current Service (84/85 Base + Additional Base)	100,617	107,554	112,772	118,352	124,917	131,834
11 Net Labor - Additional Offpeak Carmile Expense	0	126	2,293	5,271	7,951	8,819
12 Net Labor - Additional Offpeak Carmile Expense	0	255	638	816	1,567	1,819
13 Electric Power - Current Service	17,936	21,152	23,796	25,961	27,499	29,562
14 Electric Power - New Peak Direction Service	0	100	1,500	1,500	1,500	1,500
15 Purchased Transportation - Express Bus	6,708	7,727	8,113	8,519	8,945	9,392
16 Purchased Transportation - BART Shuttles	3,150	3,256	269	269	266	311
17 Purchased Transportation - BART Feeder Service	3,150	3,256	269	269	266	311
18 Purchased Transportation - BART Feeder Service	18,668	20,857	21,899	22,994	24,143	25,351
19 Other Nonlabor - New Peak Direction Service	0	1	212	541	630	1,220
20 Other Nonlabor - Marketing & Extra Offpeak Carmile Expense	0	359	427	494	586	676
21 Total Operating Expenses	\$147,144	\$163,896	\$177,030	\$191,335	\$207,177	\$220,410
22 OPERATING DEFICIT	(72,828)	(77,206)	(78,971)	(86,419)	(99,804)	(90,980)
FINANCIAL ASSISTANCE						
24 Property Tax Revenues	5,734	6,437	6,749	7,188	7,655	8,153
25 Sales Tax Revenues (BART 75% Share)	81,055	86,120	91,503	97,222	103,298	109,754
26 TDA (BART Only)	3,900	4,000	4,000	4,000	4,000	4,000
27 Debt Service - Bonds	3,900	1,844	2,893	1,891	1,199	479
28 Debt Service - Bonds	(10,222)	(9,542)	(14,975)	(14,975)	(16,860)	(16,860)
29 Capital and Other Allocations	(10,301)	(6,315)	(6,973)	(6,973)	(6,171)	(11,269)
30 Total Financial Assistance	\$72,412	\$77,205	\$78,967	\$86,417	\$89,803	\$90,977
31 NET FINANCIAL RESULT	(416)	11	14	(2)	(3)	(3)
NET OPERATING RESERVE						
32 Beginning Balance	\$5,744	\$5,328	\$5,327	\$5,323	\$5,321	\$5,321
33 Ending Balance *	\$5,328	\$5,327	\$5,325	\$5,321	\$5,321	\$5,316

* Must equal or exceed \$5,000 including allowance for 2% Sales Tax Revenue Bond operating reserve.

CONTINUATION OF TABLE III-1: REVISED 3-YEAR OPERATING BUDGET PROJECTIONS

FINANCIAL INDICATORS						
	Actual 1984/85	Budgeted 1985/86	Projected 1986/87	Projected 1987/88	Projected 1988/89	Projected 1989/90
34	60,798	61,846	63,000	67,400	70,500	73,400
35	789,292	801,166	819,000	876,200	916,500	954,200
36	45.98	48.08	51.48	50.88	52.88	55.18
37	45.98	48.18	52.18	51.68	53.28	54.28
38		0.08	16.48	32.38	46.68	69.18
39	46.48	51.48	54.98	54.28	56.38	58.68
40	15.38	17.18	18.58	17.68	18.18	18.38
41	50.58	52.98	55.48	54.88	56.78	58.78
42	\$0.174	\$0.188	\$0.199	\$0.201	\$0.209	\$0.214
43						
44						
45						
CAPITAL ALLOCATIONS						
39	6,826	8,342	13,775	13,775	15,660	15,666
40	1,396	1,200	1,200	1,200	1,200	1,200
41	2,900	3,000	3,100	3,200	3,300	3,400
42	401	1,099	1,128	1,159	1,191	1,224
43	3,000	4,216	2,745	980	1,680	6,645
44	2,000	0	0	0	0	0
45	2,000	0	0	0	0	0
Total Capital Allocations						
	(18,523)	(17,857)	(21,948)	(20,314)	(23,031)	(28,135)

Expected receipts of financial assistance through MTC, of \$1.9 million SB 1335 (STA) and \$0.6 million TDA funds are budgeted.

BART's overall sources of funding which can be applied to the operating budget exceed estimated expenses. However, as called for in last year's Short Range Transit Plan, certain capital expenditures are also to be funded from these fund sources. Capital Allocations totaling \$17.9 million are budgeted for Improvement Allowance (\$3.0 million), Revenue Bond and Sales Tax Anticipation Note Debt Service (\$9.5 million), Planning and Station Area Development (\$1.1 million), and other capital allocations (\$4.2 million).

ANTICIPATED GROWTH RATES

This section describes the assumptions on which the updated five-year financial plan is based.

Labor is the most significant element of operating costs at 65.0% with all non-labor costs comprising only 35.0% over the next 5-year period. The operating budget plan in Table III-1 identifies two components of labor expense, the current base and that which is required for expanded service. The base includes those positions which are needed to maintain current service. Over the five-year period, some new positions will have to be added for this purpose. However, most of the increase in the base reflects the cost of anticipated improvements in wages and benefits as covered by two new contracts which are to be negotiated during this five-year cycle. Maintaining current employee benefits over the five year period and providing the additional positions needed to continue existing service are also included. The increased cost of these three factors is expected to range from 4.9% to 5.5% annually.

Non-labor expense includes two major items, electric power and purchased transportation (express bus, shuttle and feeder service), and a variety of other lesser items.

The forecasting of future power cost increases is subject to a considerable degree of uncertainty given the large number of influencing factors. These include decisions made at the State and Federal levels concerning atomic power plant certification and international political developments which affect the price and/or availability of oil. Another significant factor is the magnitude of rainfall and thus available hydroelectric resources. The power cost associated with maintaining the current level of service (30,290,000 annual vehicle miles) is expected to increase by 12.5% the first year, and 7.5% annually thereafter.

It is anticipated that the Express Bus program will be streamlined during the coming five-year period to improve its financial effectiveness. At this point, it is not clear what the financial impact will be of improved operating performance. Operating costs are projected to increase by an average of 5.0% per year. Shuttle expense is a minor component. However, the purchase of feeder bus service is a major component of expense. Methods of enhancing the cost-effectiveness of this program should be vigorously pursued, including consideration of potential operation by private providers.

The incremental power cost of planned service expansions is shown in Table III-1. All other nonlabor expense items are expected to increase by an average of 5.0% annually.

BART passenger revenue growth is documented in Table III-2. These estimates reflect the impact of the 30% increase in fares approved for implementation in January 1986 and an assumed 15% increase beginning January 1989. Other operating revenue is expected to be somewhat higher in FY 1985/86 than forecast last year because of increased interest earnings on higher fund balances.

For the upcoming five-year period, BART sources of financial assistance are forecast to grow at somewhat lower rates than last year's plan assumed. This forecast now anticipates that economic growth will be more moderate than that experienced over the past 12-18 months. Property tax revenues are expected to increase by a gradually decreasing rate as the region matures developmentally. Sales tax yields are projected to expand by 6.3% per year, based on the Patterson Research Associates/DRI forecast.

Discretionary financial assistance which is allocated to BART by MTC is likewise projected at significantly different levels in this year's short-range plan, based on the preliminary allocation estimate furnished earlier this year. This estimate calls for only \$1.9 million of STA funds and \$0.6 million of TDA funds. For purposes of the current financial plan, STA funding was assumed (before the recent passage of SB 300) to decline after FY 1986/87 because of the decline in gasoline usage and prices relative to the general price level. TDA funds are expected to grow at the rate indicated above for BART sales tax revenues.

ADDITIONAL STAFFING REQUIREMENTS

In preparation for the planned increases in service capacity, BART will need to begin expanding its current staffing level to support this change. Most of the increase will occur in the operations departments as the District takes delivery of new revenue vehicles, expands to provide appropriate maintenance, and ultimately puts more cars and trains on line during peak periods. A few additional positions will be required in administrative and support departments, due to the increased workload produced by increased cash handling volume and new marketing programs.

Table III-3 summarizes new hiring requirements for the five-year period as projected by appropriate departments. The largest increases are in Field Services, Power & Way Maintenance, Finance and Rolling Stock Maintenance. As expected, staffing increases in these departments will be required in anticipation of receipt of the new revenue vehicles and with sufficient lead time for training prior to inauguration of expanded peak period train service.

Table III-2

1985 STTP PATRONAGE FORECAST INCLUDING EFFECTS OF PLANNED FARE INCREASES
(All Trips in Thousands)

	FY 84/85 ACTUAL	Percent Change	FY 85/86 PROJECTED	Percent Change	FY 86/87 PROJECTED	Percent Change	FY 87/88 PROJECTED	Percent Change	FY 88/89 PROJECTED	Percent Change	FY 89/90 PROJECTED
PATRONAGE AT CURRENT FARES											
Peak Direction (8 Max Load Pts)	60.7	2.7%	62.3	1.0%	62.9	1.0%	63.5	1.0%	64.2	0.1%	64.2
Remainder Peak Period Trips	44.8	7.7%	48.2	5.9%	51.1	6.0%	54.5	5.1%	57.2	4.5%	59.8
Incremental Peak Direction (1 Trip/Seat)	0.0		0.0		1.1	351.0%	6.9	149.3%	17.2	18.6%	20.4
Peak 4 Hours	105.4	4.8%	110.5	4.5%	115.5	4.5%	120.9	4.7%	126.4	4.5%	132.1
Offpeak Period (Midday & Evening)	105.4	4.8%	110.5	4.5%	115.5	4.5%	120.9	4.7%	126.4	4.5%	132.1
Average Weekday	211.6	4.0%	220.1	5.4%	232.0	7.3%	248.7	7.3%	268.7	8.0%	290.7
Saturday	86.5	3.8%	89.8	3.8%	94.3	5.0%	99.0	4.9%	103.8	4.3%	108.3
Sunday	31.0	1.2%	31.6	2.0%	32.6	3.2%	33.6	3.1%	34.6	3.0%	35.6
Annual Total Patronage at Current Fares	60,798	5.4%	64,062	5.0%	67,262	6.9%	71,921	6.1%	77,768	4.1%	80,942
NET RAIL REVENUE TOTAL	66,441	6.0%	70,436	4.1%	73,316	6.9%	78,394	6.1%	84,767	4.1%	88,942
Annual Total Passenger Miles	789,292	5.2%	830,240	5.0%	871,717	6.9%	932,101	8.1%	1,007,670	4.1%	1,049,011
PATRONAGE AFTER FARE INCREASE IN FY 85/86											
Peak Direction (8 Max Load Pts)	61.1		61.1		60.5		61.1		61.7		61.7
Remainder Peak Period Trips	45.0		45.0		48.0		52.4		55.0		57.2
Incremental Peak Direction	0.0		0.0		1.1		1.1		1.1		1.1
Peak 4 Hours	108.4		108.4		110.9		120.1		126.4		132.1
Offpeak Period (Midday & Evening)	104.5		104.5		105.7		112.4		119.2		124.0
Average Weekday	212.9		212.9		216.7		232.5		252.5		282.2
Saturday	81.5		81.5		85.6		89.8		94.2		98.3
Sunday	46.8		46.8		48.7		50.6		52.6		54.3
Annual Total Patronage after 30% Increase	1,78	61,847	1.9%	63,001	7.0%	67,399	8.2%	72,941	4.1%	75,934	
NET RAIL REVENUE TOTAL	\$77,308		\$89,461		\$95,707		\$103,576		\$107,827		\$107,827
Annual Total Passenger Miles	801,166		818,998		876,200		945,313		984,110		984,110
PATRONAGE AFTER FARE INCREASE IN FY 88/89											
Peak Direction (8 Max Load Pts)	61.0		61.0		60.4		61.0		61.0		60.4
Remainder Peak Period Trips	44.9		44.9		47.9		51.9		54.9		56.3
Incremental Peak Direction	0.0		0.0		1.0		1.0		1.0		1.0
Peak 4 Hours	131.9		131.9		134.9		137.9		140.9		142.4
Offpeak Period (Midday & Evening)	116.1		116.1		119.1		122.1		125.1		126.6
Average Weekday	248.1		248.1		251.1		254.1		257.1		253.7
Saturday	91.9		91.9		94.9		97.9		99.9		93.3
Sunday	51.6		51.6		52.6		53.6		54.6		51.6
Annual Total Patronage after 15% Increase	4.6%	70,497	4.6%	73,399	4.6%	76,497	4.1%	79,399	4.1%	73,399	
NET RAIL REVENUE TOTAL	\$107,870		\$107,870		\$107,870		\$107,870		\$107,870		\$119,645
Annual Total Passenger Miles	916,479		916,479		916,479		916,479		916,479		\$119,645

Table III-3

PROJECTED REQUIREMENTS FOR ADDITIONAL STAFF POSITIONS#
 FY 1984/85 - FY 1989/90
 (As of June 30th)

DEPARTMENT	BUDGET 84/85*	INCREMENTAL POSITIONS					SUBTOTAL 5-YEARS	TOTAL 89/90
		85/86	86/87	87/88	88/89	89/90		
General Manager	5							5
Legal	17							17
Finance	102	8	9	3	14	4	38	140
District Secretary	4							4
Planning & Analysis	31	2					2	33
Public Affairs	12		1	1			2	14
Safety	14							14
Employee Relations	50							50
Affirmative Action	8							8
Budget & Capital Program Control	15							15
Materials Management & Procurement	70		4	9			13	83
Information Systems	34							34
Administrative Services	36							36
TOTAL ADMINISTRATION & SUPPORT SERVICES	398	10	14	13	14	4	55	453
Maintenance & Engineering	1201	1	46	41	2	1	91	1292
Admin. & Maintenance Support	134			1			1	135
Communications & Component Repair	164		8	4	2	1	15	179
Rolling Stock Maintenance	315	1	15	20			36	351
Power & Way Maintenance	492		23	16			39	531
Engineering & Construction	96							96
Field Services	710	4	33	44	11	19	111	821
Admin & Support & Analysis	24							24
Train Operations	305							305
Station Operations	214							214
Police Services	167							167
TOTAL OPERATIONS DEPARTMENTS	1911	5	79	85	13	20	202	2113
TOTAL DISTRICT	2309	15	93	98	27	24	257	2566
CUMULATIVE INCREASE	---	15	108	206	233	257	257	--

Including equivalent positions which are capitalized or otherwise reimbursable.
 Does not include part-time EPA's and Cadets.

* Includes 140 equivalent positions which are capitalized or otherwise reimbursable.

FIVE-YEAR OPERATING BUDGET PLAN

The five-year operating budget plan is summarized in Table III-1. Actual results for FY 1984/85 are also shown.

The outlook for increased levels of financial assistance is not promising at this time. Budget requirements at both State and Federal levels are especially challenging and new tax initiatives are not likely to be realized. With this outlook, cutbacks in financial assistance funds are a distinct possibility. Accordingly, the planned fare increases are essential for continued provision of District service and programmed improvements.

In this presentation, an estimated year-end result is shown for each year. Line 33 represents the District's ending balance in its net operating reserve, or working capital. District financial operations require a working capital balance of \$5 million. The revenue bond covenant requires that a reserve be maintained equivalent to 2% of the following year operating budget. As noted, this will be funded from capital reserves as necessary.

The plan assumes that the revenue bond debt service requirements will be funded each year by an allocation from the operating budget. This and other debt service requirements are summarized in Table III-4.

Table III-4

FIVE-YEAR PLAN DEBT SERVICE SUMMARY
(000)

	<u>FY 83/84</u>	<u>FY 84/85</u>	<u>FY 85/86</u>	<u>FY 86/87</u>	<u>FY 87/88</u>	<u>FY 88/89</u>	<u>FY 89/90</u>
<u>Debt Service Expense</u>							
General Obligation Bond Interest Redemption	52,715	53,152	53,840	54,218	54,737	55,200	55,600
SSD #1 Bond Interest and Redemption	738	741	734	735	736	740	745
Revenue Bond Debt Service	6,785	6,826	8,342	13,775	13,775	15,660	15,666
Sales Tax Anticipation Note Debt Service	<u>979</u>	<u>1,396</u>	<u>1,200</u>	<u>1,200</u>	<u>1,200</u>	<u>1,200</u>	<u>1,200</u>
Total Debt Service Requirements	\$61,217	\$62,115	\$64,116	\$69,928	\$70,448	\$72,800	\$73,211
<u>Sources of Funds</u>							
General Obligation Bond Interest and Redemption Fund	52,715	53,152	53,840	54,218	54,737	55,200	55,600
SSD #1 Bond Interest and Redemption Fund	738	741	734	735	736	740	745
Allocation from Operating Budget for Revenue Bond Debt Service	6,785	6,826	8,342	13,775	13,775	15,660	15,666
Allocation from Operating Budget for Sales Tax Anticipation Note Debt Service	<u>979</u>	<u>1,396</u>	<u>1,200</u>	<u>1,200</u>	<u>1,200</u>	<u>1,200</u>	<u>1,200</u>
Total Sources of Funds	\$61,217	\$62,115	\$64,116	\$69,928	\$70,448	\$72,800	\$73,211

FIVE-YEAR CAPITAL BUDGET PROJECTIONS

The District's capital program is the primary means for achieving expanded BART capacity and service level objectives. The process through which the program is financed is a major aspect of BART financial planning involving not only a number of federal, state, and local grant sources, but BART's operating budget and reserves. The following sections describe the financial requirements for BART's capital program.

The focus of the analysis is on changes from the previous short-range transit plan. This year's SRTP reflects New Rail Transit Starts and Extensions Program and policy decisions made by the BART Board.

PROGRAM FINANCIAL REQUIREMENTS

The first step in describing financial requirements is to update cash flow estimates for all projects contained in BART's program. Estimates of annual cash requirements (cash flows) are developed by the project's sponsoring department. The fund source information (fund splits) for funded projects is based on past grant actions. Generally, fund source projections for unfunded projects are based on BART's latest submission to the MTC Transportation Improvement Program (TIP) priority process. Project justifications for FY 85/86 submittals to the MTC Transportation Improvement Program priority process are shown in appendix D.

BART's five-year funded and unfunded capital program is presented in Tables III-5 and III-7 beginning on pages III-13 and III-17, respectively. These tables list all capital projects, their estimated costs, and annual expenditure projections (cash flows). For these projects, the sum of the funded budget and the estimated unfunded portion equals the total project cost. Due to the uncertainty about funding for system extensions, estimated costs for this program are shown separately in Table III-12. Funded and unfunded cash flows by funding source are summarized in Tables III-6 and III-8 on pages III-16 and III-21, respectively.

PROJECTED SOURCES

The federal "Gas Tax" legislation of 1982 substantially modified the federal role in capital assistance. As a result of this tax, the transit industry has a trust fund that is a dedicated funding source in addition to using dollars from the general fund. Section 3 funds, an outcome of this trust fund, are now targeted for major transit improvements and the federal share was reduced to 75% of project cost. The Section 9 program for more routine capital items is provided through formula grants to local jurisdictions and will cover 80% of a project's cost. BART's split of projects between Sections 3 and 9 is based upon the capital priorities process conducted by the Metropolitan Transportation Commission. Section 3 funds are being provided for 90 new transit vehicles as well as a share of the Daly City Project. The funds shown are as requested in recent negotiations with UMTA. They also reflect the Letter of Intent for the transit vehicles.

State and Federal funding availability is based upon the estimates provided by MTC. MTC allocated bridge tolls are assumed to be available at the rate of \$3 million per year.

Available BART capital reserves are also identified along with estimated interest earnings with interest calculated on an annual basis. In each year, funded cash flows are drawn down from the starting balance of each reserve source. The interest earned on the resulting balance accrues to that account. Simple interest is calculated at a 9% annual rate. The Revenue Bond Construction Fund includes the proceeds of the 1982 Sales Tax Revenue Bond sale. BART reserves contribute a significant amount to the Daly City Turnback. In addition, reserves contribute part of the local match for the New Transit Vehicles.

A final element in the capital financial picture is the linkage to the annual operating budget. This connection in the annual budget includes capital and other allocations for revenue bond debt service, improvement allowance, extension right-of-way acquisition, planning, and station area development.

Projection of grant funding is subject to considerable uncertainty. Availability of federal funding is based upon the assumption that Section 9 will be appropriated as authorized, and BART will receive the same share programmed for FY 1984/85 except in the out years where project needs are less clearly defined. Section 3 funds are assumed as required for the transit vehicle and Daly City projects.

A federal budget has been proposed that would result in severe cuts in transportation budget. These budget cuts would eliminate funds from the general fund and require that the gas tax (the 1982 federal gas tax legislation) be distributed on a formula basis. The transit industry is requesting a freeze on the existing transit program, thus, asking to maintain the previous year's transportation budget.

Proposed federal budget cuts in capital assistance could jeopardize the completion of the Daly City Turnback and Yard Project. Deletion of "new starts" funds would remove the needed federal assistance for the extension program. The proposed 50% reduction in formula funds for routine capital projects would mean a \$40 million/year shortfall in sustaining transit facilities in the San Francisco-Oakland area.

On the state level, The Transportation Planning and Development (TP&D) funds have drastically decreased as a result of a reduction in gas usage and prices. It is projected that by 1990 there will be no TP&D funds available. Legislation is presently being developed to restore dollars to this fund. In addition, substantial uncertainty must be attached to state guideway funding due to California's recent turn toward more emphasis on highway and major projects in Southern California. In the longer term, they make it less likely that BART will be able to obtain state funding for extensions.

The capital plan contains a number of projects that are currently unfunded and for which there is no identified funding source. These projects include some \$158,972,000 which can be seen in Table III-8. The projects involved are primarily parking facilities at BART stations. The projects were not programmed for Federal funding because it is unlikely there will be enough Federal funding in the region to cover these costs. It is anticipated that the 1985 Sales Tax Revenue Bond Issue may be a mechanism for funding all or part of this group of projects.

CAPITAL FUNDING ADEQUACY

Given the funding assumptions discussed, a comparison with capital requirements is shown in Table III-9 on pages III-22 through III-24. The table shows the aggregate need and projected availability by source for each year in the current planning period.

Because of their magnitude and financial complexity, additional detail is provided in Tables III-10, III-11, and III-12, beginning on page III-25 for the Daly City Turnback and Yard, the New Transit Vehicles, and the BART Extensions.

It will be necessary to receive assistance from each level of government in order to fund the extension program. Since federal funds are in short supply, a strong commitment for state and local funding is important to demonstrate local support to federal decision makers. As seen in Table III-12, the BART Extensions are planned on the basis of fifty percent federal funding, twenty-five percent state funding, and twenty-five percent local funding.

The impact of this financial plan upon BART's capital reserves is shown in Table III-13 on page III-28.

CONCLUSION

Programming of BART capital projects has been based upon the assumption that grant programs at the federal, state and local levels will continue at approximately their current levels. Given this assumption, BART's capital program appears fundable with one important exception: Funding for system extensions is highly uncertain even with continuation of a federal program in this category due to intense competition from other metropolitan areas.

Reduction of the current federal program will endanger not only potential extension funding, but BART's current Capacity Expansion Program and routine capital replacement process.

Table III-5

BART FIVE-YEAR FUNDED CAPITAL PROGRAM (\$X1000)

CASH FLOWS

FMS NO.	PROJECT NAME	PRIOR YRS	85/86	86/87	87/88	88/89	89/90	91/92	TOTAL
GROUP 1: VEHICLE									
418G	WAKE GRID SHIELDS	0	220	0	0	0	0	0	220
418H	MOTOR RELAY UPGRADE	6002	915	0	0	0	0	0	6917
418J	BRAKE RELAY LOGIC MOD-OVERLOAD	161	0	0	0	0	0	0	161
418K	REPLACE PCB-FILLED CAPACITORS	0	1037	0	0	0	0	0	1037
418L	HANDRAILS (VESTIBULE)	0	309	0	0	0	0	0	309
418M	TRANSIT VEHICLE FIREHARDENING	11633	9185	0	0	0	0	0	20818
418N	NEW DBL POSITIV PLATE BATTERIES	370	344	0	0	0	0	0	714
42AA	150 2ND GEN TRANS VEH W/ PRO ATC	12988	62560	128437	0	0	0	0	203985
42CA	NEW VEHICLE ATC - PREPRODUCTION	3829	203	0	0	0	0	0	4032
	SUBTOTAL	34903	74773	128437	0	0	0	0	238193
GROUP 2: FACILITIES/MAINLINE									
0-9-	EXTENSIONS R.O.W. ACQUISITION	6990	6100	0	0	0	0	0	13090
01XG	PERM IMPS/CALTRANS LOT-FMS (1)	1050	650	0	0	0	0	0	2354
02AB	FREMENT-SO. BAY STUDY & AA/ELS	45	46	153	0	0	0	0	244
03FD	FIRE MAIN MODIFICATIONS (BHT)	111	228	0	0	0	0	0	339
04AB	EIR & PREL EMGRG/ P-LINE PH I	42	46	152	0	0	0	0	240
07CB	KE TRACK (KET)	21744	2212	0	0	0	0	0	23956
08AC	L-LINE EXTENSION PLANNING	45	91	152	0	0	0	0	288
11FH	STA VENTILATN FAN CONTROL MODS	35	107	0	0	0	0	0	142
11H-	DAILY CITY TURNBACK & YARD	31647	21213	1681	7383	0	0	0	61924
12AB	ALTERN. ANALYSIS & EIR-SFO	60	47	153	0	0	0	0	260
15AW	ADDITIONAL MILEPOST SIGNS	200	0	0	0	0	0	0	200
	SUBTOTAL	61969	30740	2945	7383	0	0	0	103037
GROUP 3: FACILITY STATION & ACCESS									
0--K	PARKING CAPACITY EXPANSION	1560	0	0	0	0	0	0	1560
03CG	WET STANDPIPE WALNUT CK TUNNEL	32	106	0	0	0	0	0	138
03LG	FRINGE PARKING FACILITY-WCS (1)	0	0	0	0	0	750	0	750
04AA	BUS STATION PARKING LOT-NCS(XR)	95	1213	0	0	0	0	0	1308
04BA	200-SP BAILEY RD PK/RD LOT-ANS	2589	690	0	0	0	0	0	3279
04VA	200-SP HILLCREST AV P/R LOT-ANS	1305	387	0	0	0	0	0	1692
05MD	COMPLETE WEST END OF LCT (RIS)	0	0	0	0	0	100	0	100
111G	REPLACE SECURITY DOORS-CC STA	5	42	0	0	0	0	0	47
111I	RESTROOM ACCESS MODS - CCS	6	31	0	0	0	0	0	37
15AK	EMPLOYEE BREAKROOMS AT STATIONS	16	80	0	0	0	0	0	96
15LC	ESCALATOR REHABILITATION	0	2242	2000	360	0	0	0	4602
15NG	SELF OPERATOR-ELEVATORS/HNDICPD	207	200	70	0	0	0	0	477
	SUBTOTAL	5615	4991	2070	360	0	0	0	14086
GROUP 4: FACILITIES/SUPPORT									
01TC	EXPAND SVC PIT/ADD COVER-HTY	6	106	0	0	0	0	0	112
7910	OVERHAUL WHEEL TRUING MACHINE	0	125	0	0	0	0	0	125
	SUBTOTAL	6	231	0	0	0	0	0	237
GROUP 5: TRAIN COPIER									
20--	BEYSI	35	425	489	514	246	15	76	1800
20AC	ELIMINATE STATION INTERFACES	2072	200	128	0	0	0	0	2400
20AD	E-O-LINE MAKES & BREAKS	0	0	0	0	0	0	20	20
20AE	NON E-O-LINE MAKES & BREAKS	0	0	0	0	0	0	10	10

PART FIVE-YEAR FUNDED CAPITAL PROGRAM (\$X1000)

CASH FLOWS

FWS NO.	PROJECT NAME	PRIOR YRS	85/86	86/87	87/88	88/89	89/90	91/5	TOTAL
GROUP: TRAIN CONTINUED									
20MF	TIMELOCKING MOOS	0	100	125	98	0	0	0	323
20FE	PERMANENT B-POINTS	67	35	0	0	0	0	195	297
21FB	ACT SYSTEM IMPROVEMENT	0	70	0	0	0	0	0	70
61--	INTEGRATED CONTROL SYSTEM - ICS	13881	6000	5000	0	0	0	2464	27345
	SUBTOTAL	16055	6830	5742	612	246	15	2765	32265
GROUP: AFC & COMMUNICATIONS									
2793	COMMUNICATIONS CABLE NETWORK	9867	2223	0	0	0	0	0	12090
27EB	REPLACE FIELD COMPUTERS-DAS	0	0	0	0	0	0	49	49
271C	FIRE PHONES (BHT)	10	227	0	0	0	0	15	252
2703	RADCOM	3186	569	0	0	0	0	0	3735
2709	PLATFORM PA EXT ABOVE GRD STAS	30	0	35	0	0	0	182	247
279B	PLATFORM CCTV - DOWNTOWN STAINS	0	0	0	0	0	0	115	115
4A3B	REPLACE AFC EQUIP COMPONENTS	0	115	0	0	0	0	0	135
4SAC	EXPAND AFC DAS CAPABILITY	50	150	40	0	0	0	0	240
4SAH	AC/DART/MUNI SUPER PASS	160	700	765	1025	0	0	0	2650
4SBF	18M TICKET TRANSPORT	0	500	0	0	0	0	0	500
45CB	"B" RETHOPE IT - CUBIC AFC	70	65	22	0	0	0	0	157
45DA	REPAIR & REDESIGN TKT. ENCDRS	207	0	0	0	0	0	207	207
	SUBTOTAL	13590	4549	862	1025	0	0	361	20377
GROUP: ELECTRIFICATION									
03CH	34.5 KV SUBTRANSN LINE MOOS-CLN	0	0	0	0	0	0	70	70
03CI	TEST 34.5 KV SUBTRANSN LINE-CLN	0	0	0	0	0	0	67	67
03IX	2ND PWR TRANSFORMER/E-PORTIL-BHT	22	237	0	0	0	0	0	259
09FE	RPLC PCB TRANSFORMER @ SF VENT	80	300	164	0	0	0	0	564
15EG	ELECTRICAL CAPACITY IMPROVMENTS	124	2550	2550	2546	0	0	0	7770
	SUBTOTAL	226	3037	2734	2546	0	0	137	8730
GROUP: PROCUREMENTS									
15CL	RAIL REPLACEMENT PROG 1/11 182/4	0	0	630	0	0	0	0	630
15CL	RAIL REPLACEMENT PROG 84/6 111/1V	0	0	399	363	0	0	0	762
15CL	RAIL REPL PH V (86/7)	0	0	348	0	0	0	0	348
64--	REPLACE MGMT INFO SYS - MIS	4285	175	0	0	0	0	0	4460
643D	MIS COMPUTER UPGRADE-HRQWCSFTW	0	677	148	0	0	0	0	825
79--	REPL MAINT EO (82/4)	0	400	0	0	0	0	0	400
79AC	NEW VANS FY 85/86	0	0	0	0	0	0	27	27
79AD	NEW PICKUPS FY 85/86	0	0	0	0	0	0	15	15
79D-	REPL OVERAGE SEDAN/MNT VEH 182/4	0	833	0	0	0	0	0	833
79D-	REPL OVERAGE SEDAN/MNT VEH 84/86	0	609	0	0	0	0	0	609
79DA	NEW HI-RAILERS - GEN FY 06/87	0	0	0	0	0	0	232	232
791V	VACUUMS & SCRUBBERS FY 85/86	0	0	0	0	0	0	10	10
	SUBTOTAL	4285	2694	1525	363	0	0	284	9151
GROUP: OTHER COSTS									
994S	LAND AND LAND RIGHTS	0	121	0	0	0	0	0	121
994S	AGENCY AND UTILITY AGREEMENTS	123	100	100	100	100	1000	0	1523
994S	OTHER COSTS (INS, BOND AGENTS, ETC)	28	100	100	100	100	1442	0	1870
994S	OUTSTANDING CLAIMS	0	0	0	0	0	3996	0	3996
994S	PROJECT DEVELOPMENT	0	1000	1000	1000	1000	1000	0	5000

Table III-5 (Continued)

BART FIVE-YEAR FUNDED CAPITAL PROGRAM (\$X1000)

CASH FLOWS

FMS PROJECT NO.	PROJECT NAME	PRIOR YRS	85/86	86/87	87/88	88/89	89/90	WI 5	TOTAL
GROUP: OTHER USIS									
99*5	PLANNING AND SA DVLPT.	499	1655	1371	1367	1391	1461	0	7744
99*5	INVENTORY BUILDUP	0	4670	1867	1000	2664	2370	0	12571
99*5	STA. AREA DEV. INFRASTR IMPVTS	0	1000	1000	1000	1000	1000	0	5000
99*6	FORCE ACCOUNT COSTS	0	0	4000	0	0	0	0	4000
99*6	IMPROVEMENT ALLOWANCE	2900	3000	3100	3200	3300	3400	0	18900
99*7	C-CAR START-UP	0	2000	0	0	0	0	0	2000
99*7	SPS JUSTIFIED PROJECTS	0	0	0	0	0	0	10000	10000
99*7	ADDITIONAL ROW PURCHASE	3550	13646	12538	7767	9555	15669	15000	77725
	SUBTOTAL								
	GRAND TOTAL	140469	141541	150853	20056	9801	15684	19397	503801

HART FIVE-YEAR FUNDOLO CASH FLOW BY SOURCE (\$X1000)

FUND SOURCE	PRIOR YRS	FISCAL YEAR				88/89	89/90	W1 5	TOTAL
		85/86	86/87	87/88					
FEDERAL FUNDS---									
UMTA SEC 3 80% MONEY (UMTA3)	65091	51982	3677	78	0	0	2117	122945	
UMTA SEC 3 75% MONEY (UMTA3)	2885	20734	13350	0	0	0	0	36969	
UMTA SEC 9 BLOCK GRANT (UMTA9)	17861	3087	1402	290	0	0	600	23240	
UMTA SEC 5.6.9 PLAN+CPES+(UMTAM)	493	0	0	0	0	0	0	493	
SUBTOTAL	86330	75903	18429	368	0	0	2717	183647	
STATE FUNDS---									
TPGO/SB-620 GUIDEWAY (GDWYT)	12467	12886	4835	0	0	0	343	30531	
ART. XIX/PROPS. GUIDEWAY (GDWYA)	10124	7248	833	514	246	15	246	19226	
SUBTOTAL	22591	20134	5668	514	246	15	589	49757	
REGIONAL FUNDS---									
TOA	4149	1899	563	780	0	0	61	7482	
BRIDGE TOLLS (TOLLB)	4403	3354	763	73	0	0	390	8983	
STA III (25%) (STA25)	758	276	278	0	0	0	0	1312	
STA (INC. STA 75% & REG.) (STA)	257	660	187	252	0	0	0	1356	
SUBTOTAL	9567	6189	1821	1105	0	0	451	19133	
BART FUNDS---									
GENERAL CONSTRUCTION (OPERG)	250	14664	3379	2310	3787	6326	100	30816	
BASIC SYSTEM COMPLETION (OPERO)	185	3423	9060	10735	1000	1000	30	25433	
SYSTEM IMPROVEMENT RESERVE (OPERS)	6180	1102	167	20	0	0	40	7509	
REV. BOND CONSTR. FUND (OPERV)	22	2077	111025	77	77	3482	0	116760	
VEH. FIRE HARDENING FND. (OPERV)	812	2317	0	0	0	0	0	3129	
INTEREST TRANSFER. FUND (OPERT)	0	677	148	0	0	0	15000	15825	
ROW ACQUIS. AND EXT. PLN. (ROW/E)	10946	6556	610	0	0	0	0	18112	
IMPROVEMENT ALLOWANCE (OPERT)	3064	6302	5100	3560	3300	3400	470	25196	
OPERATING FUNDS (OPERO)	401	1429	1371	1367	1391	1461	0	7420	
SUBTOTAL	21860	38547	130860	18069	9555	15669	15640	250200	
OTHER FUNDS---									
UNKNOWN	121	868	75	0	0	0	0	1064	
SUBTOTAL	121	868	75	0	0	0	0	1064	
GRAND TOTAL	140469	141541	156853	20056	9801	15684	19397	503801	

DART FIVE-YEAR UNFUNDED CAPITAL PROGRAM (\$X1000)

FMS NO.	PROJECT NAME	PRIOR YRS	85/86	86/87	87/88	88/89	89/90	W15	TOTAL
GROUP: VEHICLE									
2ND GENERATION ATD/133 A-CARS									
41GB	PROGRAM YEAR AMOUNT	8640	5150	0	0	0	0	0	13800
	UNFUNDED CASH FLOW	0	5160	0	0	0	0	0	13800
42AA 150 2ND GEN TRANS VEH W/ PRO ATC									
41709	PROGRAM YEAR AMOUNT	41709	30000	0	0	0	0	0	71709
	UNFUNDED CASH FLOW	0	168	71541	0	0	0	0	71709
	SUBTOTAL PROGRAM YEAR AMOUNT	50349	35160	0	0	0	0	0	85509
	SUBTOTAL UNFUNDED CASH FLOW	0	8608	76701	0	0	0	0	85509
GROUP: FACILITIES, MAINLINE									
0-B- EXTENSIONS R.O.W. ACQUISITION									
80084	PROGRAM YEAR AMOUNT	80084	0	0	0	0	0	0	80084
	UNFUNDED CASH FLOW	0	0	0	0	0	0	0	80084
02AB- FREMONT-SO. BAY STUDY & AA/EIS									
	PROGRAM YEAR AMOUNT	0	1556	0	0	0	0	0	1556
	UNFUNDED CASH FLOW	0	0	1556	0	0	0	0	1556
04AB- EIR & PREL ENGRG/ P-LINE PH I									
	PROGRAM YEAR AMOUNT	0	2060	0	0	0	0	0	2060
	UNFUNDED CASH FLOW	0	0	2060	0	0	0	0	2060
08AB- L-LINE EXTENSION PLANNING									
	PROGRAM YEAR AMOUNT	0	1312	0	0	0	0	0	1312
	UNFUNDED CASH FLOW	0	0	1312	0	0	0	0	1312
11R- DAILY CITY TURNBACK & YARD									
37674	PROGRAM YEAR AMOUNT	37674	38238	11904	0	0	0	0	87876
	UNFUNDED CASH FLOW	0	44742	42319	815	0	0	0	87876
12AB- ALTERN. ANALYSIS & EIR-SFO									
	PROGRAM YEAR AMOUNT	0	2240	0	0	0	0	0	2240
	UNFUNDED CASH FLOW	0	0	2240	0	0	0	0	2240
99*0- AERIAL BARRIERS PHASE I & II									
	PROGRAM YEAR AMOUNT	0	0	0	10738	0	0	0	10738
	UNFUNDED CASH FLOW	0	0	0	0	0	0	0	10738
99*1- SYSTEM SAFETY UPGRADE PH III REM									
	PROGRAM YEAR AMOUNT	0	5000	0	0	0	0	0	5000
	UNFUNDED CASH FLOW	0	0	5000	0	0	0	0	5000
	SUBTOTAL PROGRAM YEAR AMOUNT	117758	50466	11904	10738	0	0	0	190866
	SUBTOTAL UNFUNDED CASH FLOW	0	44742	49487	5915	0	0	90822	190866
GROUP: FACILITY, STATION & ACCESS									
0--K PARKING CAPACITY EXPANSION									
	PROGRAM YEAR AMOUNT	0	0	640	450	270	0	0	1360
	UNFUNDED CASH FLOW	0	0	640	450	270	0	0	1360
01EE 135 SP. PARKG FACILITY-LWS (1111)									
	PROGRAM YEAR AMOUNT	0	0	0	0	0	0	4494	4494
	UNFUNDED CASH FLOW	0	0	0	0	0	0	4494	4494
01G- FVS (ALA, P/R LOT) SURF EXP CON									
	PROGRAM YEAR AMOUNT	0	0	336	0	0	0	0	336
	UNFUNDED CASH FLOW	0	0	336	0	0	0	0	336
01G- FRUITVALE FACILITY									
	PROGRAM YEAR AMOUNT	0	0	0	0	1180	4364	0	5544
	UNFUNDED CASH FLOW	0	0	0	0	1180	4364	0	5544

Table III-7 (Continued)

BART FIVE-YEAR UNFUNDED CAPITAL PROGRAM (\$X1000)

FMS NO.	PROJECT NAME	PRIOR YRS	85/86	86/87	87/88	88/89	89/90	91/92	TOTAL
GROUP: FACILITATION & ACCESS									
014-	BFS SURFACE EXPANSION CONSR	0	0	348	0	0	0	0	348
	PROGRAM YEAR AMOUNT	0	0		0	0	0	0	348
014-	UNFUNDED CASH FLOW	0	0		0	348	0	0	348
	BAYFAIR FACILITY								
	PROGRAM YEAR AMOUNT	0	0	0	0	0	5000	0	5000
	UNFUNDED CASH FLOW	0	0	0	0	0	5000	0	5000
010-	HAS SURF EXPANSION R/W ACQ CON	0	2410	0	0	0	0	0	2410
	PROGRAM YEAR AMOUNT	0			2410	0	0	0	2410
	UNFUNDED CASH FLOW	0				0	0	0	0
010F	836 SP PKG EXPAN/PH 11 SHS (XR)	0	0	4011	0	0	0	0	4011
	PROGRAM YEAR AMOUNT	0	0						
	UNFUNDED CASH FLOW	0	0	3300	711	0	0	0	4011
014-	UCS SURF EXPANSION R/W ACQ CON	0	0	4100	0	0	0	0	4100
	PROGRAM YEAR AMOUNT	0	0						
	UNFUNDED CASH FLOW	0	0	4100	0	0	0	0	4100
034-	ORINDA FACILITY	0	0	0	0	0	0	0	0
	PROGRAM YEAR AMOUNT	0	0	0	0	5000	0	0	5000
	UNFUNDED CASH FLOW	0	0	0	0	5000	0	0	5000
03J-	LAS SURFACE EXPANSION CONSR	0	0	560	0	0	0	0	560
	PROGRAM YEAR AMOUNT	0	0						
	UNFUNDED CASH FLOW	0	0	0	0	0	0	560	560
03JG	FRINGE PKG FACILITY-LAS (I)	0	0	0	0	5000	3820	0	8820
	PROGRAM YEAR AMOUNT	0	0	0	0	5000	3820	0	8820
	UNFUNDED CASH FLOW	0	0	0	0	5000	3820	0	8820
03LG	FRINGE PARKING FACILITY-WCS (I)	0	12150	0	0	0	0	0	12150
	PROGRAM YEAR AMOUNT	0							
	UNFUNDED CASH FLOW	0	12150	0	0	0	0	0	12150
03NE	12000-SP*WESTLOT EXPANSION-PHS(I)	0	17755	0	0	0	0	0	17755
	PROGRAM YEAR AMOUNT	0							
	UNFUNDED CASH FLOW	0	17755	0	0	0	0	17755	17755
03S-	CDS SURFACE EXPANSION CONSR	0	0	540	0	0	0	0	540
	PROGRAM YEAR AMOUNT	0	0						
	UNFUNDED CASH FLOW	0	0	540	0	0	0	0	540
03SH	CUNCORD FACILITY	0	0	0	0	5636	12844	0	18480
	PROGRAM YEAR AMOUNT	0	0	0	0	5636	12844	0	18480
	UNFUNDED CASH FLOW	0	0	0	0	5636	12844	0	18480
05K-	EL CERRITO DEL NORTE FACILITY	0	0	0	5000	0	0	0	5000
	PROGRAM YEAR AMOUNT	0	0	0					
	UNFUNDED CASH FLOW	0	0	0	5000	0	0	0	5000
05K-	CNS SURF EXPANSION R/W ACQ CONS	0	0	2010	0	0	0	0	2010
	PROGRAM YEAR AMOUNT	0	0						
	UNFUNDED CASH FLOW	0	0	2010	0	0	0	0	2010
06KA	HEACULES P/R FACILITY	0	0	1100	0	0	0	0	1100
	PROGRAM YEAR AMOUNT	0	0						
	UNFUNDED CASH FLOW	0	0	1100	0	0	0	0	1100
07G-	WACARTHUR FACILITY	0	0	0	0	0	5000	0	5000
	PROGRAM YEAR AMOUNT	0	0	0	0	0	5000	0	5000
	UNFUNDED CASH FLOW	0	0	0	0	0	5000	0	5000
08KA	* LIVERMORE P/R BUS TRANSF FAC	0	0	460	0	0	0	0	460
	PROGRAM YEAR AMOUNT	0	0						
	UNFUNDED CASH FLOW	0	0	460	0	0	0	0	460

TABLE III-7 (Continued)

BART FIVE-YEAR UNFUNDED CAPITAL PROGRAM (\$X1000)

PMS NO.	PROJECT NAME	PRIOR YRS	85/86	86/87	87/88	88/89	89/90	W1 5	TOTAL
GROUP: FACILITIES & ACCESS									
11E-	D-5 SURFACE EXPANSION CONTR.	0	0	170	0	0	0	0	170
	PROGRAM YEAR AMOUNT	0	0	170	0	0	0	0	170
11E-	OAKLAND WEST FACILITY	0	0	0	0	0	0	0	0
	PROGRAM YEAR AMOUNT	0	0	0	0	0	0	0	0
11FG	2 END STAIRWAYS-PLATE/MEZ -ENS	0	0	0	0	0	0	7980	7980
	UNFUNDED CASH FLOW	0	0	0	0	0	0	0	0
	PROGRAM YEAR AMOUNT	0	356	0	0	0	0	0	356
	UNFUNDED CASH FLOW	0	0	356	0	0	0	0	356
15AZ	WET STANDPIPE & FO CONNS-21 STA	1218	0	0	0	0	0	0	1218
	PROGRAM YEAR AMOUNT	30	850	338	0	0	0	0	1218
15LC	ESCALATOR REHABILITATION	0	0	0	0	0	0	0	0
	UNFUNDED CASH FLOW	0	1480	0	0	0	0	0	1480
15N-	PH IV SYSTEM ACCESSIBILITY IMPD	0	0	0	0	0	0	0	0
	PROGRAM YEAR AMOUNT	0	0	420	0	0	0	0	420
15NG	SELF OPERATOR-ELEVATORS/HMDICPD	0	0	0	0	0	0	420	420
	UNFUNDED CASH FLOW	0	0	0	0	0	0	0	0
199*7	HANDICAPPED MOODS-EDGE	0	1300	0	0	0	0	0	1300
	PROGRAM YEAR AMOUNT	0	0	1300	0	0	0	0	1300
19	UNFUNDED CASH FLOW	1218	35451	16658	5450	17086	39008	4494	119365
	SUBTOTAL PROGRAM YEAR AMOUNT	30	850	8863	24951	17434	36028	31209	119365
	SUBTOTAL UNFUNDED CASH FLOW								
GROUP: IBRAIN CONTROL									
20--	BETSI	18165	0	0	0	0	0	0	18165
	PROGRAM YEAR AMOUNT	245	2972	3421	3599	1722	100	6106	18165
21E8	ACT SYSTEM IMPROVEMENT	0	0	0	0	0	0	0	0
	PROGRAM YEAR AMOUNT	0	249	0	0	0	0	0	249
	UNFUNDED CASH FLOW	0	249	0	0	0	0	0	249
	SUBTOTAL PROGRAM YEAR AMOUNT	18165	249	0	0	0	0	0	18414
	SUBTOTAL UNFUNDED CASH FLOW	245	3221	3421	3599	1722	100	6106	18414
GROUP: ACC & COMMUNICATIONS									
45AH	AC/BART/MUNI SUPER PASS	0	0	286	0	0	0	0	286
	PROGRAM YEAR AMOUNT	0	0	0	286	0	0	0	286
45BF	IBM TICKET TRANSPRT	0	0	0	0	0	0	0	0
	PROGRAM YEAR AMOUNT	0	1175	0	0	0	0	0	1175
	UNFUNDED CASH FLOW	0	1175	0	0	0	0	0	1175
	SUBTOTAL PROGRAM YEAR AMOUNT	0	1175	286	0	0	0	0	1461
	SUBTOTAL UNFUNDED CASH FLOW	0	1175	286	0	0	0	0	1461

Table III-7 (Continued)

PART FIVE-YEAR UNFUNDED CAPITAL PROGRAM (\$X1000)

FWS NO.	PROJECT NAME	PRIOR YRS	85/86	86/87	87/88	88/89	89/90	91/92	TOTAL
GROUP: ELECTRIFICATION									
2049	ADD'L STATION ESSENTIAL POWER								
	PROGRAM YEAR AMOUNT	0	2037	0	0	0	0	0	2037
	UNFUNDED CASH FLOW	0	300	1737	0	0	0	0	2037
	SUBTOTAL PROGRAM YEAR AMOUNT	0	2037	0	0	0	0	0	2037
	SUBTOTAL UNFUNDED CASH FLOW	0	300	1737	0	0	0	0	2037
GROUP: PROCUREMENTS									
15CL	RAIL REPL PH V (86/7)								
	PROGRAM YEAR AMOUNT	0	91	0	0	0	0	0	91
	UNFUNDED CASH FLOW	0	0	91	0	0	0	0	91
15CM	2ND RAIL REPL PROJ(1) 87/88								
	PROGRAM YEAR AMOUNT	0	0	0	0	0	0	281	281
	UNFUNDED CASH FLOW	0	0	0	0	0	0	281	281
79--	REPL MAINT EQ 84/6								
	PROGRAM YEAR AMOUNT	0	400	0	0	0	0	0	400
	UNFUNDED CASH FLOW	0	200	200	0	0	0	0	400
79--	REPL MAINT EQ 86/8								
	PROGRAM YEAR AMOUNT	0	0	400	0	0	0	0	400
	UNFUNDED CASH FLOW	0	0	200	200	0	0	0	400
79--	REPL MAINT EQ 89/90								
	PROGRAM YEAR AMOUNT	0	0	0	400	0	0	0	400
	UNFUNDED CASH FLOW	0	0	0	200	200	0	0	400
79AC	NEW VANS FY 87/88								
	PROGRAM YEAR AMOUNT	0	0	0	200	0	0	0	200
	UNFUNDED CASH FLOW	0	0	0	0	0	0	0	0
79AD	NEW PICKUPS FY 87/88								
	PROGRAM YEAR AMOUNT	0	0	0	0	0	0	32	32
	UNFUNDED CASH FLOW	0	0	0	0	0	0	32	32
79B--	REPL OVERAGE SEDAN/MNT VEH (84/6)								
	PROGRAM YEAR AMOUNT	0	0	0	0	0	0	11	11
	UNFUNDED CASH FLOW	0	0	0	0	0	0	11	11
79B--	REPL OVERAGE SEDAN/MNT VEH 86/88								
	PROGRAM YEAR AMOUNT	0	2637	0	0	0	0	0	2637
	UNFUNDED CASH FLOW	0	0	2637	0	0	0	0	2637
79B--	REPL OVERAGE SEDAN/MNT VEH (88/9)								
	PROGRAM YEAR AMOUNT	0	0	1096	0	0	0	0	1096
	UNFUNDED CASH FLOW	0	0	0	1096	0	0	0	1096
79DA	NEW HI-RAILERS - GEN FY 87/88								
	PROGRAM YEAR AMOUNT	0	370	0	0	0	0	0	370
	UNFUNDED CASH FLOW	0	0	0	0	370	0	0	370
79DA	PROGRAM YEAR AMOUNT	0	0	0	0	0	0	75	75
	UNFUNDED CASH FLOW	0	0	0	0	0	0	75	75
	SUBTOTAL PROGRAM YEAR AMOUNT	0	3496	1496	400	0	0	399	5793
	SUBTOTAL UNFUNDED CASH FLOW	0	200	3128	1496	570	0	399	5793
GRAND TOTAL PROGRAM YEAR AMOUNT									
		187490	128036	30344	16588	17086	39008	4893	423445
GRAND TOTAL UNFUNDED CASH FLOW		275	59296	143337	36147	19726	36128	128536	423445

Table III-8

BART FIVE-YEAR UNFUNDED CASH FLOW BY SOURCE (\$X1000)

FUND SOURCE	PRIOR YRS	FISCAL YEAR				89/90	W1 5	TOTAL
		85/86	86/87	87/88	88/89			
FEDERAL FUNDS-----								
UMTA SEC 3 75% MONEY (UMTAD)	210	12104	82446	3085	1476	86	12689	112096
UMTA SEC 9 BLOCK GRANT (UMTAG)	24	44167	32149	15438	950	0	1104	93832
FEDERAL AID INTERSTATE (FAI)	0	0	0	0	0	0	16335	16335
SUBTOTAL	234	56271	114595	18523	2426	86	30128	222263
STATE FUNDS-----								
TPCD/5B-620 GUIDEWAY (GDWYT)	0	0	12791	0	0	0	0	12791
ART. XIX/PROPS GUIDEWAY (GDWYA)	0	0	0	0	0	0	697	697
SUBTOTAL	0	0	12791	0	0	0	697	13488
REGIONAL FUNDS-----								
TOLLS	0	0	0	286	0	0	0	286
BRIDGE TOLLS (TOLLB)	41	3025	15951	5188	484	14	3733	28436
SUBTOTAL	41	3025	15951	5474	484	14	3733	28722
BART FUNDS-----								
UNKNOWN	0	0	0	12150	16816	36028	93978	158972
SUBTOTAL	0	0	0	12150	16816	36028	93978	158972
GRAND TOTAL	275	59296	143337	36147	19726	36126	128536	423445

Table III-9

CAPITAL PROGRAM COMMITMENTS BASIS
FUNDING REQUIREMENTS VS. PROJECTED FUNDING

FUND SOURCE	PRIOR	85/86	86/87	87/88	88/89	89/90	
UMTA SEC 3 90% MONEY (UMTA3)							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0
UMTA SEC 3 75% MONEY (UMTA2)							
PROJECTED	18990	40079	30000	0	0	0	89069
REQUIRED	59964	44374	0	8053	0	0	112096
DIFFERENCE	-40974	-4000	30000	-8053	0	0	-23027
UMTA SEC 9 BLOCK GRANT (UMTA9)							
PROJECTED	30000	30000	30000	30000	30000	30000	180000
REQUIRED	25928	40261	26427	680	216	320	93632
DIFFERENCE	4072	-10261	3573	29320	29784	-320	86168
UMTA SEC 5.6.1.9 PLAN-CRES-(UMTAM)							
PROJECTED	0	1725	0	0	0	0	1725
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	1725	0	0	0	0	1725
FEDERAL AID URBAN (FAU)							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0
FEDERAL AID INTERSTATE (FAI)							
PROJECTED	0	2100	1400	4000	0	0	7500
REQUIRED	0	16335	0	0	0	0	16335
DIFFERENCE	0	-14235	1400	4000	0	0	-8835
SUBTOTAL FEDERAL FUNDS							
PROJECTED	49990	73904	61400	34000	30000	30000	278294
REQUIRED	85892	100675	26427	8733	216	320	222263
DIFFERENCE	-36902	-26771	34973	25267	29784	-320	56031
TP60/SB-620 GUIDEWAY (GOWYT)							
PROJECTED	0	12791	0	0	0	0	12791
REQUIRED	12791	0	0	0	0	0	12791
DIFFERENCE	-12791	12791	0	0	0	0	0
OTHER STATE (OTHER)							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0
ART. XIX/PROPS GUIDEWAY (GOWYA)							
PROJECTED	0	2100	0	0	0	0	2100
REQUIRED	697	0	0	0	0	0	697
DIFFERENCE	-697	2100	0	0	0	0	1403
ART. XIX INTERMODAL (PS1)							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0
SB-1750							
PROJECTED	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0

Table III-9 (Continued)

CAPITAL PROGRAM COMMITMENTS BASIS
FUNDING REQUIREMENTS VS. PROJECTED FUNDING

FUND SOURCE	PRIOR	85/86	86/87	87/88	88/89	89/90	WI 5	TOTAL
SUBTOTAL STATE FUNDS								
PROJECTED	0	14991	0	0	0	0	0	14991
REQUIRED	13488	0	0	0	0	0	0	13488
DIFFERENCE	-13488	14991	0	0	0	0	0	1493
TDA								
PROJECTED	0	286	0	0	0	0	0	286
REQUIRED	0	0	286	0	0	0	0	286
DIFFERENCE	0	286	-286	0	0	0	0	0
BRIDGE TOLLS (TOLLB)								
PROJECTED	2772	3000	3000	3000	3000	3000	0	17772
REQUIRED	8026	13791	3631	2855	54	0	79	28436
DIFFERENCE	-5254	-10791	-631	145	2946	3000	-79	-10664
STA 111 (25%) (STA25)								
PROJECTED	0	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0	0
STA (11C, STA 75% & REG.) (STA)								
PROJECTED	0	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0	0
III-23								
SUBTOTAL REGIONAL FUNDS								
PROJECTED	2772	3286	3000	3000	3000	3000	0	18058
REQUIRED	8026	13791	3517	2855	54	0	79	28722
DIFFERENCE	-5254	-10505	-517	145	2946	3000	-79	-10664
GENERAL CONSTRUCTION (OPERG)								
PROJECTED	667	2000	1000	0	0	0	0	3667
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	667	2000	1000	0	0	0	0	3667
BASIC SYSTEM COMPLETION (OPERS)								
PROJECTED	0	0	500	11900	1000	1000	0	14400
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	0	0	500	11900	1000	1000	0	14400
SYS. IMPROVEMENT RESERVE (OPERS)								
PROJECTED	0	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0	0
REV. BOND CONSTR. FUND (OPERV)								
PROJECTED	0	0	0	-11400	0	0	0	-11400
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	-11400	0	0	0	-11400
VEH. FINE HARDENING FND. (OPERF)								
PROJECTED	0	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0	0

Table III-9 (Continued)

CAPITAL PROGRAM COMMITMENTS, BASIS
FUNDING REQUIREMENTS VS. PROJECTED FUNDING

FUND SOURCE	PRIOR	85/86	86/87	87/88	88/89	89/90	WIS	TOTAL
INTEREST TRANSF. FUND (OPERT)								
PROJECTED	0	0	-500	-500	-1000	-1000	0	-3000
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	0	0	-500	-500	-1000	-1000	0	-3000
ROW ACQUIS. AND EXT. PLN. (ROW/E)								
PROJECTED	0	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0	0
IMPROVEMENT ALLOWANCE (OPERI)								
PROJECTED	2900	3000	3100	3200	3300	3400	0	19000
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	2900	3000	3100	3200	3300	3400	0	19000
OPERATING FUNDS (OPERO)								
PROJECTED	2401	3099	3128	3159	3191	3224	0	18202
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	2401	3099	3128	3159	3191	3224	0	18202
NEW STARTS ACCOUNT (OPERN)								
PROJECTED	0	0	0	0	0	0	0	0
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	0	0	0	0	0	0	0	0
II								
N SUBTOTAL BART FUNDS								
PROJECTED	5968	8099	7228	6359	6491	6624	0	40769
REQUIRED	0	0	0	0	0	0	0	0
DIFFERENCE	5968	8099	7228	6359	6491	6624	0	40769
UNKNOWN								
PROJECTED	0	0	0	0	0	0	0	0
REQUIRED	80084	13570	0	5000	16816	39008	4494	158972
DIFFERENCE	-80084	-13570	0	-5000	-16816	-39008	-4494	-158972
SUBTOTAL OTHER FUNDS								
PROJECTED	0	0	0	0	0	0	0	0
REQUIRED	80084	13570	0	5000	16816	39008	4494	158972
DIFFERENCE	-80084	-13570	0	-5000	-16816	-39008	-4494	-158972
GRAND TOTAL								
PROJECTED	57730	100180	71628	43359	39491	39624	0	352012
REQUIRED	187490	128036	30344	16588	17086	39008	4893	423445
DIFFERENCE	-129760	-27856	41294	26771	22405	616	-4893	-71433

Table III-10

DALY CITY TURNBACK/YARD FUNDING			
(\$000)			
<u>SOURCE</u>	<u>FUNDED</u>	<u>UNFUNDED</u>	<u>TOTAL</u>
UMTA 3 80%	7,900	-0-	7,900
UMTA 3 75%	10,969	33,069	44,038
UMTA 9 80%	14,341	45,852	60,193
STATE ABDRR	500	-0-	500
STATE ART XIX	10,100	-0-	10,100
STA	417	-0-	417
MTC	434	8,955	9,389
BART RESERVES	<u>17,263</u>	<u>-0-</u>	<u>17,263</u>
TOTAL	61,924	87,876	149,800

Table III-11

TRANSIT VEHICLE FUNDING 150-C-CARS (Excluding Preproduction ATC) (\$000)			
<u>SOURCE</u>	<u>FUNDED</u>	<u>UNFUNDED</u>	<u>TOTAL</u>
UMTA 3 80%	47,079	-0-	47,079
UMTA 75%	26,000	56,000	82,000
STATE TP&D	18,527	12,791	31,318
BRIDGE TOLLS	1,431	2,918	4,349
BART BOND/RESERVES	<u>110,948</u>	<u>-0-</u>	<u>110,948</u>
TOTAL	203,985	71,709	275,694

Table III-12

EXTENSION PROJECTS BY PROJECTED SOURCE				
(\$000)				
<u>PROJECT</u>	<u>FUNDING SOURCE</u>			
	<u>UMTA 3</u>	<u>STATE</u>	<u>LOCAL</u>	<u>TOTAL</u>
W. Pittsburg/North Concord	197,300	98,650	98,650	394,600
Irvington/Warm Springs	180,950	90,475	90,475	361,900
Castro Valley/Dublin	110,100	55,050	55,050	220,200
San Francisco Airport	<u>214,200</u>	<u>107,100</u>	<u>107,100</u>	<u>428,400</u>
TOTAL	702,550	351,275	351,275	1,405,100

Table III-12
SUMMARY OF BART RESERVE CASH BALANCES
(Estimate in \$000's for 1990)

	<u>Line Item</u>	<u>Cumulative Total</u>
Cash Balances (Estimated for June 30, 1985)		176,477
- General Construction (Fund 01)*	25,014	
- Basic System Completion (Fund 01)*	11,278	
- System Improvement Reserve	5,062	
- Revenue Bond Construction Fund	112,805	
- Vehicle Fire Hardening Reserve	2,221	
- Interest Transfer Fund	12,931	
- ROW Acquisition Operating Reserve	7,166	
Anticipated Interest		28,623
Capital Allocations from Operating Budget and TDA Reimbursement		3,000
Estimated Balance for Distribution		208,100
BART Obligations, Local Shares, and Costs Unavailable from Grant Sources, Allocations to Current 5-year and Future Operating Budget, and Net Project Costs		199,189
Contingency Funds (Balance)		8,911

*Interest accrues to the Bond Fund and is available in the five-year period; however, reserve balances do not change from year to year to reflect this since the interest does not actually accrue to the specific reserve.

ATTACHMENT

PUBLIC COMMENT

3/8/85



City of Berkeley



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TTY (415) 644-6915

May 14, 1985

Mr. Howard Goode
BART
Department of Planning & Analysis
800 Madison Street
Oakland CA 94607

Dear Mr. Goode:

Thank you for the opportunity to review your Draft 1985 Short Range Transit Plan. The increase in BART's patronage, as well as the favorable trends in cost effectiveness and productivity indicated are most encouraging. The major capacity expansion that the Plan outlines will mean long lasting positive effects for the Bay Area.

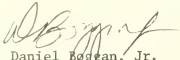
Our specific comments regarding the Plan are the following:

- Although specific fare increases are not discussed in the plan, we are concerned that any fare increase would further discourage short trips. There is a potential for these types of trips within Berkeley; however, the existing fare structure discourages that.
- Coordination with AC Transit is crucial and should be continued. Specifically, we support the joint monthly pass (Super Pass) concept being discussed which is similar to the BART/MUNI Fast Pass.
- For FY 86-87 the Plan proposes 150 new parking spaces at the North Berkeley Station and 100 at Ashby. We were informed that the additional capacity will be achieved by re-stripping the existing lot. We would like to be informed of those changes before they actually occur. BART should also be considering increasing the frequency and convenience of a feeder service to both those stations as well as others in the system, and negotiate with AC for that service.
- Off-peak and reverse commute patronage should continue to be encouraged through advertisement, shoppers' specials, fare decreases during mid-day.
- As indicated in the Plan, further improvements for handicapped and elderly access is crucial.
- Finally, we support the BART extensions to Pleasanton, Livermore, Concord-Antioch, and the I-80 corridor since they will considerably

improve the transit access within the East Bay and lessen vehicular congestion in these corridors.

We certainly hope that the proposed improvements will be successfully implemented as described in your plan.

Sincerely,



Daniel Boggan, Jr.
City Manager

cc: Vicki Elmer, Assistant City Manager, Planning and Community Development
Marjorie Macris, Planning Administrator



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 464-6000

June 28, 1985

Mr. Daniel Boggan, Jr.
City Manager
City Berkeley
2180 Milvia Street
Berkeley, CA 94704

WILFRED T. USSERY
PRESIDENT

JOHN GLENN
VICE-PRESIDENT

KEITH BERNARD
GENERAL MANAGER

Dear Mr. Boggan:

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT

NELLO BIANCO
2ND DISTRICT

ARTHUR J. SHARTSIS
3RD DISTRICT

MARGARET K. PRYOR
4TH DISTRICT

ROBERT S. ALLEN
5TH DISTRICT

JOHN GLENN
6TH DISTRICT

WILFRED T. USSERY
7TH DISTRICT

EUGENE GARFINKLE
8TH DISTRICT

JOHN H. KIRKWOOD
9TH DISTRICT

This is in response to your comments on the draft 1985 BART Short Range Transit Plan (S RTP), specifically concerning the detrimental impact of fare increases on short trips, your request for advance notice of planned increases in parking lot capacity through restriping at Ashby and North Berkeley Stations, and your recommendation that BART negotiate with AC Transit for more feeder service to those stations.

The indicated deficit in next year's budget makes it likely that a fare increase will be needed to sustain operations, although no proposal has yet been adopted. Some erosion of trip-making follows a fare increase but, given the lack of alternative means of funding increased costs, an increase is necessary. In developing new fares, consideration will be given to proportional increases for all trips so that long trips and short trips will go up by similar percentages. To the extent possible, BART fares will be coordinated with those of AC Transit.

Plans for restriping the Ashby and North Berkeley Station parking lots call for this work to be done beginning in the spring of 1987. Preliminary plans for these stations have not been developed at this time. BART will provide preliminary plans to the City as they are available, for review and concurrence.

BART is proposing to commit \$5.5 million to AC Transit feeder operations during FY 85/86. This represents an increase of \$2.5 million over FY 84/85.

Mr. Daniel Boggan, Jr.
June 28, 1985
Page 2

We hope that this will improve or at least sustain the level of feeder service now afforded our east bay stations. Local concern about this service should be directed to AC Transit.

Thank you for reviewing the draft SRTP and for the supportive comments in your letter of May 24, 1985.

Sincerely,


Howard L. Goode
Department Manager

cc Director Wilfred T. Ussery
Director Arthur J. Shartsis

CENTRAL
CONTRA COSTA
TRANSIT AUTHORITY

1400 N. CALIFORNIA BLVD
SUITE 520
WALNUT CREEK CA 94596
(415) 930 8999

7/14/85

*The County
Connection*

May 14, 1985

Mr. Howard Goode
Department Manager
Planning & Analysis
Bay Area Rapid Transit District
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688

Dear Mr. Goode:

I have reviewed a draft copy of BART's Short Range Transit Plan (SRTP) for the five-year period July 1985 to June 1990 with an eye towards impacts upon the Central Contra Costa Transit Authority (CCCTA) and the CCCTA service area. Based upon that review, I have a number of comments which focus upon BART's plan to streamline its Express Bus service in the CCCTA service area over the course of the next five years.

First, CCCTA feels that local transit operators and local jurisdictions should have a greater ongoing role in the development of BART's plans for streamlining its Express Bus operations. Streamlining plans which are developed independent of the input of these parties stand little chance of finding acceptance at either a political or operational level. In particular, CCCTA feels that it is appropriate, in fact necessary, to develop streamlining plans through joint staff efforts. This is very important in cases where large amounts of local service are to be transferred from BART Express Bus operations to local operator responsibility. BART's streamlining of the "M" route and pending changes to the "D" route are examples of a local operator (CCCTA) being expected to replace large amounts of local service dropped by BART. In order to effectively replace the local service being dropped by BART, local operators must have access to detailed information regarding ridership and resource commitments on express routes to be streamlined. Without such informational access, smooth transfer of service cannot be achieved and the public will be greatly discommoded. This is exactly what has happened as a result of BART streamlining in the "M" corridor.

Second, while CCCTA understands BART's desire to streamline its Express Bus service in order to bring such service more in line operationally with the way it was originally conceptualized, CCCTA also feels that BART must maintain a balance between meeting its own goals for cost control and fulfilling its responsibility to provide adequate access to the BART rail system. Streamlining plans which require elimination of large numbers of stop locations

JUNE BULMAN
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City of Concord

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SECRETARY
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City of Lafayette

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Contra Costa County

GAIL MURRAY
City of Walnut Creek

BEVERLY LANE
City of Danville

DIANNE SCHINNERER
City of San Ramon

ROBERT C. PATRICK
General Manager

Mr. Howard Goode

Page 2

May 14, 1985

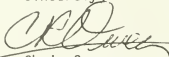
will seriously undermine the ridership potential of BART Express Bus routes. This will be especially true when BART relies upon "Touch-and-Go" points for access to Express routes in lieu of future park-and-ride lot availability. Clearly, BART must not overemphasize improvements in Express Bus travel times at the expense of accessibility to the same express service.

Third, current BART Express Bus routes provide service to BART stations in the late evening and on weekends. CCCTA does not currently provide service in the late evening or on Sundays, nor does it plan to have adequate resources to provide such service within the current five-year planning period. CCCTA wishes to emphasize the point that as long as BART identifies service during these time periods as necessary for access to the BART rail system, BART itself will have to assume responsibility for such service. BART's Draft S RTP does not contradict this point; CCCTA staff merely wish to emphasize it.

Finally, where the responsibility for large amounts of local service are transferred from BART Express service to local operators as the result of streamlining, it may be impossible for the local operator to adequately replace the local service given available resources. This has proven to be true in the "M" corridor in cases when CCCTA has been asked to assume responsibility for a large amount of local service which was discontinued by BART. CCCTA has far from the adequate number of available revenue vehicles necessary to provide the level of service previously supplied on the BART "M" route. The result has been severe overcrowding on CCCTA bus routes in the "M" corridor and deterioration of CCCTA schedule adherence in that corridor. CCCTA feels that in such a case when the local operator does not have adequate vehicle resources to support the streamlining process, BART must work with the local operator to secure the necessary vehicle resources. While the manner in which added revenue vehicles are made available to the local operator can be negotiated to both parties mutual satisfaction, it is clear that failure to do so severely undermines the streamlining process, ignores the need for interoperator coordination, and damages transit's role in general.

If you have any questions regarding the comments put forth, please feel free to contact me. I look forward to a response to the issues raised above.

Sincerely,



Chris Owens
Transit Planner

cc: Joyce Fisher Olson, Director of Marketing & Planning
John Sindzinski, Manager of Service Development
Robert C. Patrick, Jr., General Manager



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 464-6000

June 28, 1985

Mr. Chris Owens
Transit Planner
Central Contra Costa Transit Authority
1990 N. California Blvd., Suite 520
Walnut Creek, California 94596

WILFRED T. USSERY
PRESIDENT

JOHN GLENN
VICE-PRESIDENT

KEITH BERNARD
GENERAL MANAGER

Dear Mr. Owens:

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT

NELLO BIANCO
2ND DISTRICT

ARTHUR J. SHARTSIS
3RD DISTRICT

MARGARET K. PRYOR
4TH DISTRICT

ROBERT S. ALLEN
5TH DISTRICT

JOHN GLENN
6TH DISTRICT

WILFRED T. USSERY
7TH DISTRICT

EUGENE GARFINKLE
8TH DISTRICT

JOHN H. KIRKWOOD
9TH DISTRICT

This is in response to your comments on the draft 1985 BART Short Range Transit Plan (SRTP). Your comments address BART's plan to streamline its Express Bus service in the CCCTA service area during the next five years.

Your comments deal with the following issues:

- o The desire of local jurisdictions and operators for more involvement in developing plans for streamlined BART Express Bus service,
- o The need for BART to improve Express Bus cost effectiveness without jeopardizing system access,
- o BART's willingness to provide bus service for access during hours when CCCTA does not operate, and
- o BART's recognition of the need to assure that enough vehicles are available to the local operator which is expected to assume responsibility for providing local service after streamlining of BART Express Bus service.

BART staff agrees it is essential for local jurisdictions and transit operators to be involved in plans for Express Bus streamlining. We have worked with your agency on service changes involving both Martinez and the San Ramon Valley.

As BART implements streamlining plans to improve its Express Bus cost effectiveness, some access trade-offs are inevitable. BART staff recognizes that access requirements during times when CCCTA does not operate (e.g., late evenings, Sundays) probably will continue to be covered by BART Express Bus service, provided there is a reasonable level of patronage.

Mr. Chris Owens

June 28, 1985

Page 2

Plans for Express Bus streamlining have been discussed for several years. We have emphasized the need to shift responsibility for local service to a local operator. There will be transitional problems in such a transfer of responsibility and we recognize the need to work with local operators on the sequence of changes.

Thank you for reviewing and commenting on the draft 1985 BART Short Range Transit Plan.

Sincerely,



Howard L. Goode

Department Manager

Planning and Analysis

cc Director Nello Bianco

Director Barclay Simpson

Director Arthur J. Shartsis



CITY OF HAYWARD. DEPT. OF PUBLIC WORKS

April 24, 1985

Mr. Howard Goode
Department of Planning &
Analysis
Bay Area Rapid Transit District
P.O. Box 12688
Oakland, CA 94604-2688

Dear Mr. Goode:

We have briefly reviewed the draft 1985 short range transit plan and wish to offer the following comments:

1. There is a limit to squeezing more parked cars in a surface parking lot. We feel that for good planning, BART should consider parking garages to accommodate future patronage.
2. On page II-20, you mentioned the daily patronage of two Hayward BART stations. We wonder if you have the peak hour volume and riders O-D etc., data. If you have, please send us a copy.

Thanks for offering us an opportunity to review the report.

Very truly yours,


EDWARD E. PHILLIPS
Director of Public Works

cc: Traffic Engineer



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 464-6000

June 28, 1985

WILFRED T. USSERY
PRESIDENT

JOHN GLENN
VICE-PRESIDENT

KEITH BERNARD
GENERAL MANAGER

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT

NELLO BIANCO
2ND DISTRICT

ARTHUR J. SHARTSIS
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5TH DISTRICT

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WILFRED T. USSERY
7TH DISTRICT

EUGENE GARFINKLE
8TH DISTRICT

JOHN H. KIRKWOOD
9TH DISTRICT

Mr. Edward E. Phillips
Director of Public Works
City of Hayward
22300 Foothill Boulevard
Hayward, California 94541

Dear Mr. Phillips:

This is in response to your comments after reviewing the draft 1985 BART Short Range Transit Plan.

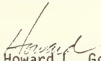
1. Regarding your recommendation, in view of the capacity limits of any surface parking lot, that BART consider parking garages to accommodate future patronage: we agree that multilevel parking structures are necessary in view of current and projected future demand. Funding considerations are the main factor inhibiting parking structure development. However, means of funding such structures are being considered, including joint development.
2. Generally, constructing new surface parking lots is less costly than parking structures. Therefore, if vacant land adjacent to a station currently appears to be available, we have planned surface parking improvements. This is the case for both South Hayward and Hayward Stations. If this land is developed by others prior to implementation of our projects, we would reevaluate our plans, including the possibility of substituting parking structures for the surface parking lots.
2. You requested peak hour patronage volumes for the two Hayward BART stations including origin-destination data. Attached is a copy of our daily detailed patronage report for a recent typical weekday. The total number of trips

Mr. Edward E. Phillips
June 28, 1985
Page 2

exiting each station is summarized in the right-hand column under "GRAND" and the number of entries by station of origin is indicated in the row to the left of the total. Enclosed are summaries for the 60-minute periods 4-5 p.m. and 5-6 p.m., plus a daily summary.

Thank you for reviewing and commenting on the plan.

Sincerely,


Howard L. Goode
Department Manager
Planning and Analysis

cc: Director Robert S. Allen
Director John Glenn

CITY OF OAKLAND



CITY HALL • ONE CITY HALL PLAZA • OAKLAND, CALIFORNIA 94612

Planning Department

TTY 839-6451

May 15, 1985

Mr. Keith Bernard
General Manager
Bay Area Rapid Transit District
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688

Dear Mr. Bernard:

We have reviewed BART's Draft 1985 Short Range Transit Plan (S RTP) and have a number of comments. The Office of Public Works and the Office of Fire Services will be submitting separate comment letters to you.

Comparing the Draft 1985 S RTP with the 1984 plan, we have found few major differences. Consequently, our comments are mainly a reiteration of those that we submitted last year, with additional emphasis on the differences that we found between the two plans.

Concord-Oakland Service: Last year we pointed out the need for a Concord-Oakland train which does not go on to San Francisco. You noted in your response that over seven times as many people commute from the Concord line to San Francisco than to downtown Oakland and the Fremont line. According to 1980 U.S. Census data compiled by MTC, the ratio of San Francisco train commuters to those of Oakland is somewhat lower. Furthermore, the data indicates that about 40% of central and east Contra Costa commuters who work in downtown San Francisco are commuting by BART, while only about 20% of central and east Contra Costa commuters who work in downtown Oakland are using BART.

In other words, there is great potential for more Concord line BART commuters to downtown Oakland. The fact that most now drive is probably due to the good auto access and easy parking in Oakland's Central District, compared to the crowded condition of BART trains filled with San Francisco-bound commuters. But as development in both downtown San Francisco and downtown Oakland continues, roads get overcrowded, and parking becomes more difficult, Concord-Oakland commuters will have to look for other alternatives. BART is the only transit option in this corridor. To make it attractive for Oakland commuters, the trains will have to become less crowded.

We realize that BART is pursuing a number of projects which will eventually increase the capacity of the system through closer headways. However, comparing the schedules of those projects in the 1985 SRTP with the schedules in the 1984 plan, we note that all of the anticipated completion dates have been extended by anywhere from three months to almost two years. Furthermore, the plan notes that "completion dates may be altered by funding limitations or changes necessary for successful project implementation. The key consideration in adding new service is to maintain or enhance current reliability standards, even if that requires additional time for solving problems and testing in order to assure a smooth transition to higher service levels." [Emphasis added.] While we appreciate the need for caution in view of past experiences, we can only interpret this to mean that the schedules in the 1985 plan are probably optimistic.

The potential demand for Concord-Oakland service is there now, and will only increase in the future. It remains to be seen if BART's capacity expansion projects can keep pace. Meanwhile, the only practical solution, as we see it, is exclusive Concord-Oakland service which does not go on to San Francisco.

We also note that this year's Draft SRTP contains a new section on "Capital Investment Planning" addressing "the need to implement capacity expansion projects which will augment the inherent capability of the present system to transport commuters into the congested Central Business Districts of San Francisco and Oakland." This section is worded very vaguely and gives no specific details. We would like to know exactly what types of projects BART has in mind, and would like to be involved in the early planning of those projects.

Concord-Berkeley Service: We continue to advocate the establishment of BART Express Bus service between Concord line stations and Berkeley as a means of alleviating traffic congestion in the Caldecott Tunnel and along Tunnel Road. According to MTC's 1980 U.S. Census data, there are about 6,300 people commuting from central and east Contra Costa County to the City of Berkeley. Of these, less than five percent use transit, while over 60 percent drive alone.

As you pointed out in your reply to our comments last year, a transit alternative currently available is to transfer from BART to AC Transit's 51 line at Rockridge station. As the above figures indicate, very few commuters appear to be doing this.

Studies have shown that one of the greatest deterrents to transit use is the need to transfer. Either transit option from Concord to Berkeley (BART Concord line to AC Transit 51 line, or BART Concord line to BART Richmond line) requires a transfer. A direct Express Bus would not.

Such a route could follow Highway 24 to Telegraph Avenue, and then travel via Telegraph, Bancroft, Shattuck, and University Avenues to West Berkeley. It would serve major employment centers including Alta Bates Hospital, the U.C. campus, downtown Berkeley, and West Berkeley. As we mentioned last year, it would be most effective if coordinated with Caltrans to provide HOV lanes on Highway 24.

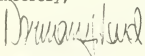
Planning for System Access and Station Area Development: Table II-8 of the SRTP indicates proposed additional parking at five Oakland stations, enlarging the total parking capacity from the current 3,664 spaces in Oakland to 6,525 spaces, an increase of almost 80%. We would like to be involved in the planning and review of these parking expansion projects as early as possible in the process. Our concerns include impacts on Oakland's circulation system as well as aesthetic and functional impacts on the neighborhoods around BART stations.

Under "Station Area Development", we note that last year's SRTP mentioned possible projects at three Oakland stations (Oakland West, Coliseum, and Lake Merritt), whereas this year's plan does not mention any Oakland stations. What is the status of planning for station area development in Oakland?

Extension Service and Capacity: We support the BART line extensions within Alameda and Contra Costa counties, and the acquisition of future station land for interim use as park and ride lots for Express Buses, as discussed in the SRTP. We also support BART's stated first priority of completing extensions within the three-county district before undertaking extensions outside the district. We would point out, however, that one of the four "Phase I" extensions, namely the "San Francisco Airport" extension, is not within the three-county district. While this may be consistent with MTC's New Starts and Extensions Program, it is contrary to the adopted policy of the Oakland City Council, which specifically opposes construction of an extension to San Francisco Airport.

Thank you for the opportunity to review BART's Short Range Transit Plan. We hope our comments are helpful in improving and expanding BART service, and we look forward to your response.

Sincerely,


NORMAN J. LIND
Director of City Planning

NJL:CSB:cjr
cc: Eugenia Thompson, Traffic Engineering
James Art, Fire Prevention
Warren Boyd, Engineering and Planning Services
TR 14.99



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (415) 464-6000

June 28, 1985

Mr. Norman J. Lind
Director of City Planning
City Hall
Oakland, California 94612

WILFRED T. USSERY
PRESIDENT

JOHN GLENN
VICE-PRESIDENT

KEITH BERNARD
GENERAL MANAGER

Dear Mr. Lind:

This is in response to your review of the draft 1985 BART Short Range Transit Plan (SRTP). Your letter addressed the following issues:

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT

NELLO BIANCO
2ND DISTRICT

ARTHUR J. SHARTSIS
3RD DISTRICT

MARGARET K. PRYOR
4TH DISTRICT

ROBERT S. ALLEN
5TH DISTRICT

JOHN GLENN
6TH DISTRICT

WILFRED T. USSERY
7TH DISTRICT

EUGENE GARFINKLE
8TH DISTRICT

JOHN H. KIRKWOOD
9TH DISTRICT

- o Concord-Oakland Service
- o Concord-Berkeley Service
- o Planning for System Access and Station Area Development
- o Extension Service and Capacity

Concord-Oakland Service

You recommend that Concord-Oakland service be inaugurated so that commuters to Oakland wouldn't be subject to crowding caused by San Francisco commuters, and contend that BART would thereby attract a greater percentage of Concord line commuters.

Presently, all available BART vehicles are in service during peak periods. Addition of an extra train for Concord-Oakland service is therefore not possible at this time. It is not clear, however, based on current ridership patterns, that provision of exclusive Concord-Oakland service will be warranted once BART capacity is increased.

You provided 1980 census data on journey-to-work patterns which suggest a more even balance of C-line commuters to San Francisco and Oakland than the 7:1 ratio we noted last year. Current BART data on A.M. peak travel indicate 9,490 C-line commuters exited at the four San Francisco CBD stations between 7-9 a.m. compared with 1,240 at the Lake Merritt, Oakland City Center-12th Street and 19th Street Stations, a ratio of 7.65:1.

Auto commuting from the C-line to downtown Oakland is more attractive than to downtown San Francisco because of more plentiful, less expensive parking in Oakland, and the shorter trip to Oakland which avoids the congestion on the San

Mr. Norman J. Lind
June 28, 1985
Page 2

Francisco-Oakland Bay Bridge. Auto commuting to Oakland will probably continue to be more attractive and diminish only slightly as development in Oakland reduces the availability of CBD parking.

Therefore, we feel the current service mix properly matches indicated demand patterns. As BART capacity is expanded in the future, Concord-Oakland service will be enhanced through the provision of more C-line trains.

Concord-Berkeley Service

You recommend that BART operate express bus service between central Contra Costa County and Berkeley as a means of alleviating traffic congestion in the Caldecott Tunnel and along Tunnel Road." Further, you cite 1980 census data which suggest that of the 6,300 commuters identified as the target market, only 5% use transit and 60% drive alone. You suggest that direct bus service would be more attractive to these commuters than a trip by BART and a transfer to a 51 line AC Transit bus. Several private, charter bus operators presently provide specialized, scheduled service in this corridor. You and Berkeley may wish to work with the university to attract such an operator.

Planning for System Access and Station Area Development

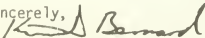
You reference planned parking improvements at five Oakland stations and request early involvement in the planning and review process. It is our intention to involve your department in this process as soon as definitive proposals are prepared.

In regard to joint development, BART's intent is to encourage and seek joint development at sites where market potential exists, and local government is supportive. Lake Merritt is considered an excellent site and will be in the forefront of our marketing efforts. BART continues to participate in the Coliseum Area Planning Committee, and is currently discussing with the City the possibility of a joint planning effort at MacArthur. Finally, with regard to Oakland West, we plan to monitor the soon-to-be launched city planning effort for the area.

Extension Service and Capacity

We appreciate your support for the proposed BART extension program and recognize your concern about the San Francisco Airport extension.

Thank you for reviewing and commenting on the plan.

Sincerely, 
Keith Bernard
General Manager

cc Director Wilfred T. Ussery
Director Margaret K. Pryor
Director Arthur J. Shartsis

CITY OF OAKLAND



CITY HALL • ONE CITY HALL PLAZA, • OAKLAND, CALIFORNIA 94612

Office of Public Works

TTY 839-6451

May 29, 1985

Mr. Keith Bernard
Bay Area Rapid Transit-District
800 Madison Street
Oakland, CA 94604-2688

Subject: Draft-1985 Short Range Transit Plan

Dear Mr. Bernard:

Thank you for the opportunity to review the draft of the 1985 Short Range Transit Plan. We have two major concerns: one regarding service to/from downtown Oakland and the other regarding our overall input in the planning/design of proposed changes to the parking areas at the stations in Oakland.

We would like to recommend that a section be included in the plan which addresses service for downtown Oakland. The section to be included is proposed as follows:

Oakland CBD Service

As patronage to/from downtown Oakland increases, a need for service originating in Oakland may become necessary. The City of Oakland is currently developing a Central District Development Program and will be assessing BART patronage as well as developing transit options. Options for increased BART service include an Oakland Shuttle either on the Fremont or Concord Line.

The Oakland shuttle option on the Fremont line could originate at Fremont and end at the MacArthur Station. The MacArthur Station is designed to accommodate turnbacks. The Oakland shuttle on the Concord line could turnback at one of the following locations: south of Lake Merritt, north of Coliseum or at Bayfair. Of these three locations, Bayfair is the most desirable in that delays and effects on headways would be minimized. Also, the Concord/Bayfair route would open the accessibility for Oakland Airport service. At either the Lake Merritt or the Coliseum turnback locations, trains would have to turnback on a revenue line. This would require a window concurrently on both tracks which could result in significant delay to revenue and restrict headways. At Bayfair, there is a pocket track in the middle and there would only be a need for a window on one track.

Mr. Keith Bernard

-2-

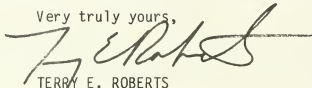
May 29, 1985

The City's Central District Transit study will include the development of future BART patronage demands to/from Oakland. This will provide BART staff the demand projections necessary to develop these options and others as a means of increasing BART service to/from downtown Oakland.

In regard to proposed changes to the parking areas at the BART stations, the City would like to become involved in the development and design phases of these changes. Many of these changes will affect the city streets in the vicinity of the stations. Therefore, we are requesting to review plans, early in the development stage, for any changes at the stations which will affect the city streets.

Once again thank you for the opportunity to comment on the Short Range Plan.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Terry E. Roberts", with a stylized, sweeping flourish extending to the right.

TERRY E. ROBERTS
Director of Public Works

EPT/ea

cc: City Manager
City Planning
James Art, Fire Prevention
Warren Boyd, Engineering and Planning Services
Charley Bryant, City Planning
Charles Roberts, Port of Oakland



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12688
Oakland, CA 94604-2688
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June 28, 1985

Mr. Terry E. Roberts
Director of Public Works
City Hall
Oakland, California 94612

WILFRED T. USSERY
PRESIDENT

JOHN GLENN
VICE-PRESIDENT

KEITH BERNARD
GENERAL MANAGER

Dear Mr. Roberts:

I am writing in response to your letter of May 29, 1985 concerning comments based on your review of the draft BART 1985 Short Range Transit Plan (S RTP). Your comments address service to/from downtown Oakland and input to the planning/design of modifications to parking facilities at BART stations in Oakland.

DIRECTORS

BARCLAY SIMPSON
1ST DISTRICT

NELLO BIANCO
2ND DISTRICT

ARTHUR J. SHARTSIS
3RD DISTRICT

MARGARET K. PRYOR
4TH DISTRICT

ROBERT S. ALLEN
5TH DISTRICT

JOHN GLENN
6TH DISTRICT

WILFRED T. USSERY
7TH DISTRICT

EUGENE GARFINKLE
8TH DISTRICT

JOHN H. KIRKWOOD
9TH DISTRICT

Oakland CBD Service

You recommend that a section be added to the plan which would address service for downtown Oakland, and suggest two alternative "shuttle" route configurations that would provide such service: Concord-Oakland or Fremont-Oakland.

Inasmuch as the service requirements analysis in the plan is presented at a systemwide, route-by-route level and not by community, and all comments on the plan and our responses are formally incorporated into the final document, I would prefer not to add such a selection, but to address your concerns in this letter.

Commuters to downtown Oakland from the Fremont line currently have direct service and, although load factors (ratio of riders to seats) on this route have remained well below those on the three transbay routes, demand has not increased significantly as reflected in our Quarterly Performance Reports. The ratio of commuters from the Concord Line who travel to San Francisco versus downtown Oakland is currently 7.65 to 1, up from the 7 to 1 ratio observed last year.

In addition to current usage data, our service requirements analysis was based on projections of future growth in commuting prepared by the Association of Bay Area Governments and the Metropolitan Transportation Commission. These projections anticipate growth of commuting to downtown Oakland between 1980 and 2000 to average approximately 2.7% annually, well within BART historical growth rates and the projected increase in BART capacity.

Mr. Terry E. Roberts
June 28, 1985
Page 2

Given this picture of current and future demand to downtown Oakland, our proposed service expansion does not include the type of shuttle service to Oakland which you suggest. However, the plan does call for five more Concord/Daly City peak period trains and three more Richmond/Fremont peak trains. These routes serve the two corridors in question.

Our plan is updated annually. If current demand patterns shift or future projections are revised, we will reassess service requirements to downtown Oakland. In this regard, we will monitor the findings of the Downtown Transit Study.

Parking Facilities Planning

You indicate that the City would like to become involved in the development and design phases of proposed changes to parking facilities at Oakland stations, in order to assess impacts on city streets. It is our intention to involve your department in this process as soon as definitive proposals are prepared.

Thank you for revising and commenting on the plan.

Sincerely,

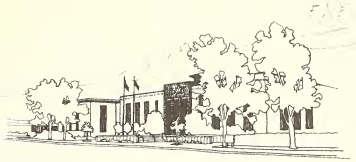
A handwritten signature in dark ink, appearing to read "Keith Bernard". The signature is fluid and cursive, with the first name "Keith" and last name "Bernard" clearly distinguishable.

Keith Bernard
General Manager

cc: Director Wilfred T. Ussery
Director Margaret K. Pryor
Director Arthur J. Shartsis

City of San Leandro

Civic Center, 835 E. 14th Street
San Leandro, California 94577



Office of the Mayor 415-577-3356

May 9, 1985

Mr. Keith Bernard
Bay Area Rapid Transit District
800 Madison Street
P.O. Box 12688
Oakland, CA 94605

SUBJ: BART 1985 Short-Range Transit Plan

Dear Mr. Bernard:

The City of San Leandro appreciates the chance to review the Draft 1985 Short-Range Plan which you recently sent us. We have two BART stations in our city and we are always interested in what BART is planning. We agree that the most pressing issue facing BART is providing adequate capacity and we support BART's efforts in that regard.

We do have several concerns with the Draft Plan. Our main concern is that BART's role in solving regional transportation problems is not reflected in the Plan. Several recent studies have indicated that future transportation demand will exceed capacity in the Nimitz/Doolittle Corridor. San Leandro has been working with the cities of Alameda, Oakland, Hayward, and the Port of Oakland, Caltrans, and MTC to find solutions to this problem, and it is obvious that transit will have to play a major role. It is important that BART, as a regional transit agency, be involved in this effort to increase capacity in this congested corridor.

A second concern in San Leandro is that the Short-Range Plan does not stress the importance of making BART work for suburban employment centers. During the commute periods, the reverse direction has abundant capacity available. We believe BART should be finding ways to make the reverse commute attractive, whether by improving station access for residents of city centers or more closely linking suburban stations with employment centers.

Another area of concern is cooperative development of station areas. According to existing BART policy, the primary purpose of station area development is new revenue. We believe that BART

May 9, 1985

has a responsibility as a regional agency to encourage development where the need is greatest, not just where the highest potential for revenue exists. We recommend that BART include community benefit as a criterion for station area development.

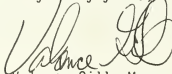
The parking lots at both the Bayfair and San Leandro stations are now at capacity. We noted the planned parking lot expansions of 873 spaces at Bayfair and 250 spaces at San Leandro in the 6-year program. We look forward to working with your staff to implement these needed improvements in a manner that will keep the landscaping at these stations substantially intact.

Improving peak period capacity is an obvious concern. One suggestion is to encourage riders with time flexibility to travel off-peak instead of at peak times. Restricting senior citizen and student discounts to off-peak periods only would encourage these flexible travelers to plan off-peak trips. This would create some space for commuters who must travel during the peak periods.

The Draft Plan mentions that 89.8% of all station area facilities are at or above standards established for cleanliness. The San Leandro station must be in the other 10.2%. We are concerned with overall station cleanliness, especially pigeons and litter, and feel that either the standards need to be raised or maintenance of the San Leandro station brought into conformance with other stations.

Future travel demands will have to be met more by transit than highways. BART has an increasingly important role to play in providing the transportation capacity needed by future growth and development in the region, and BART planning must reflect this expanding responsibility.

Very truly yours,



Valance Gill, Mayor

VG:SS:mmc



BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street
P.O. Box 12683
Oakland, CA 94604-2688
Telephone (415) 464-8000

June 28, 1985

WILFRED T. USSERY
PRESIDENT

JOHN GLENN
VICE-PRESIDENT

KEITH BERNARD
GENERAL MANAGER

DIRECTORS

BARCLAY SIMPSON

1ST DISTRICT

NELLO BIANCO

2ND DISTRICT

ARTHUR J. SHARTSIS

3RD DISTRICT

MARGARET K. PRYOR

4TH DISTRICT

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5TH DISTRICT

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8TH DISTRICT

JOHN H. KIRKWOOD

9TH DISTRICT

The Honorable Valance Gill
Mayor of San Leandro
Civic Center
835 E. 14th Street
San Leandro, California 94577

Val
Dear Mayor-Gill:

This is in response to your comments after reviewing the BART draft 1985 Short Range Transit Plan (SRTP). Your comments on the SRTP concern the following issues:

- o BART's role in solving regional transportation problems,
- o Making BART work for suburban employment centers,
- o Encouragement of joint development where the need is greatest,
- o Coordination with City staff regarding parking improvements at San Leandro and Bay Fair Stations,
- o Expansion of commuter capacity through promotion of flextime and restriction on discount ticket use, and
- o Maintenance of San Leandro Station.

BART's Role in Regional Transportation Problems

You observe that the SRTP does not reflect BART's role in solving regional transportation problems, in particular in the highly congested Nimitz/Doolittle corridor, and that BART should be involved in and play a major role in efforts to increase capacity.

We are participating in the recently initiated study of this corridor in cooperation with concerned local agencies. Our current capacity expansion program will increase A-line service and capacity in the bay shore corridor. The impact of these improvements on the Nimitz/Doolittle corridor will depend on provision of effective feeder bus connections, part of our ongoing efforts with AC Transit.

BART Linkage to Suburban Employment Centers

In regard to concern that the SRTP may not be stressing linkage to suburban employment centers enough, I would agree that BART should actively go after this market in view of the system's reverse direction capacity. BART seeks to attract riders to any nonpeak direction service, and has recently modified its Express Bus service to Pleasanton to provide access to the Hacienda Business Park Area. BART's extension program will accomplish this objective by further linking suburban stations with business/employment centers.

Joint Development Where the Need is Greatest

Your point about working with communities where the need for development is well-taken. We have recently taken steps to conduct development studies at Richmond and MacArthur Stations. An element of these studies is how development can be stimulated. We would be pleased to join with San Leandro to tackle development issues for San Leandro and Bayfair stations.

Coordination on Parking Improvements

It is our intent to work with City staff in developing plans for implementing any proposed improvements, including restriping.

Supplemental Efforts to Increase Commuter Capacity

You recommend that BART promote off-peak travel by anyone with an option to avoid the peak. You recommend restriction of travel to off-peak periods by persons using discount tickets. We are generally trying to accomplish these objectives, especially through promotion of off-peak travel. When BART fare increase proposals are discussed in the next few weeks, I will pass your thoughts regarding discount ticket usage along to the BART Board of Directors.

San Leandro Station Maintenance

The maintenance problems to which you refer are mainly caused by pigeons. A solution to this problem consisting of a light netting has been tested at Daly City Station with impressive results. Efforts to implement this solution are under way. When in place, we expect this netting to keep pigeons from entering the station area, with a corresponding improvement in station appearance.

Thank you for reviewing the draft SRTP and providing your comments.

Sincerely,



Keith Bernard
General Manager

cc: Director Robert S. Allen

****FARES****

Regular Adult: Rail fares are largely based on a distance formula ranging from 60¢ to \$2.15. The average weekday rail fare is currently \$1.28. Regular express bus fares are 60¢ and 90¢ for one and two zone rides, respectively; rail patrons transferring to an express bus may obtain a free transfer worth 60¢.

Discounts: A 4.8% rail fare discount is provided through the sale of \$21 tickets for \$20. Rail fares for handicapped persons, students 5-12 years of age, and persons 65 years of age and older are 10% of the regular adult fares. Children under 5 can ride free. Discount bus fares are 10¢ for one zone and 20¢ for two zones for the groups listed above. A \$20 BART/MUNI monthly pass is also available, allowing for unlimited BART and San Francisco MUNI travel within San Francisco.

Transfers: Free transfers can be made between all BART trains. Special agreements between BART and most other Bay Area operators permit up to a 50% discount for connecting transit service (on a round-trip basis).

****PATRONAGE****

Average Weekday: BART patronage averaged 211,612 trips per weekday during FY 1984/85. Of these trips, 105,441 (49.8%) occurred within the 4-hour peak travel period (2 morning hours plus 2 afternoon hours). Transbay trips constitute 50.2% of weekday travel with 24.6% Eastbay and 25.2% Westbay.

Weekends: Saturday ridership averaged 86,474 trips during FY 1984/85 with 46.8% Transbay, 30.1% Eastbay, and 23.1% Westbay. Ridership for Sunday averaged 50,968 with market shares of 46.6% Transbay, 32.8% Eastbay, and 20.6% Westbay.

Annual Ridership: Rail ridership during FY 1984/85 was 60,798,419 trips versus a forecast of 60,436,100 for the same period (0.6% above forecast and 4.3% above total ridership for FY 1983/84).

****CAPACITY****

On-Line Requirements: BART currently operates a maximum of 43 on-line trains which require 86 A-cars and 235 B-cars. In addition to these, 8 trains are held as ready spares requiring 16 A-cars and 24 B-cars.

Maximum Service Delivery: As of June 1985, scheduled peak hour capacity for the three Transbay routes serving downtown San Francisco and Oakland stations is 16 trains consisting of 150 cars (or 10,800 seats). For the Eastbay route, which also serves downtown Oakland stations, maximum peak hour capacity is 5 trains consisting of 25 cars (or 1,800 seats).

****KEY PERFORMANCE INDICATORS****

On-Time Performance: Daily on-time performance has consistently been above 90% since October 1980 and averaged 94.8% during FY 1984/85.

Scheduled Train Dispatches Completed: Performance has consistently been above 98% since January 1981 and averaged 98.9% during FY 1984/85.

Load Factors: Peak hour load factors during FY 1984/85 averaged 1.47 for Transbay service and 1.19 for the Eastbay route. Load factors for the shoulder period (approximately 45 minutes before and after the peak hour) averaged 1.26 Transbay and 1.09 for the Eastbay route. Maximum average load factors for offpeak service is 0.76 systemwide.

Peak Period Transbay Throughput: The percentage of scheduled Transbay capacity actually provided during FY 1984/85 is 98.0% for trains and 96.5% for cars.

****OTHER PERFORMANCE INFORMATION FOR FY 1984/85****

PERFORMANCE DATA (in thousands)	
Total Passengers	60,798.4
Passenger-miles	789,290.7
Car-miles	30,634.6
Car-hours	1,123.9
Rail operating cost	\$137,221.3
Express bus cost	\$6,707.8
Feeder/Shuttle bus cost	\$3,215.4
Total operating cost	\$147,144.5
Net passenger revenue	\$67,467.9
Other revenue	\$6,848.3
Total revenue	\$74,316.2
Operating deficit	\$72,828.3

PERFORMANCE INDICATORS	
Farebox ratio	45.85%
Operating ratio	50.50%
Passenger-miles/seat-mile	35.78%
Rail operating cost/passenger-mile	17.39¢
Rail operating cost/passenger	\$2.26
Total operating cost/passenger	\$2.42
Total operating revenue/passenger	\$1.22
Total operating deficit/passenger	\$1.20
Rail operating cost/car-hour	\$122.09
Rail operating cost/car-mile	\$4.48
Passenger-miles/car-hour	702.28
Passengers/car-mile	1.98



